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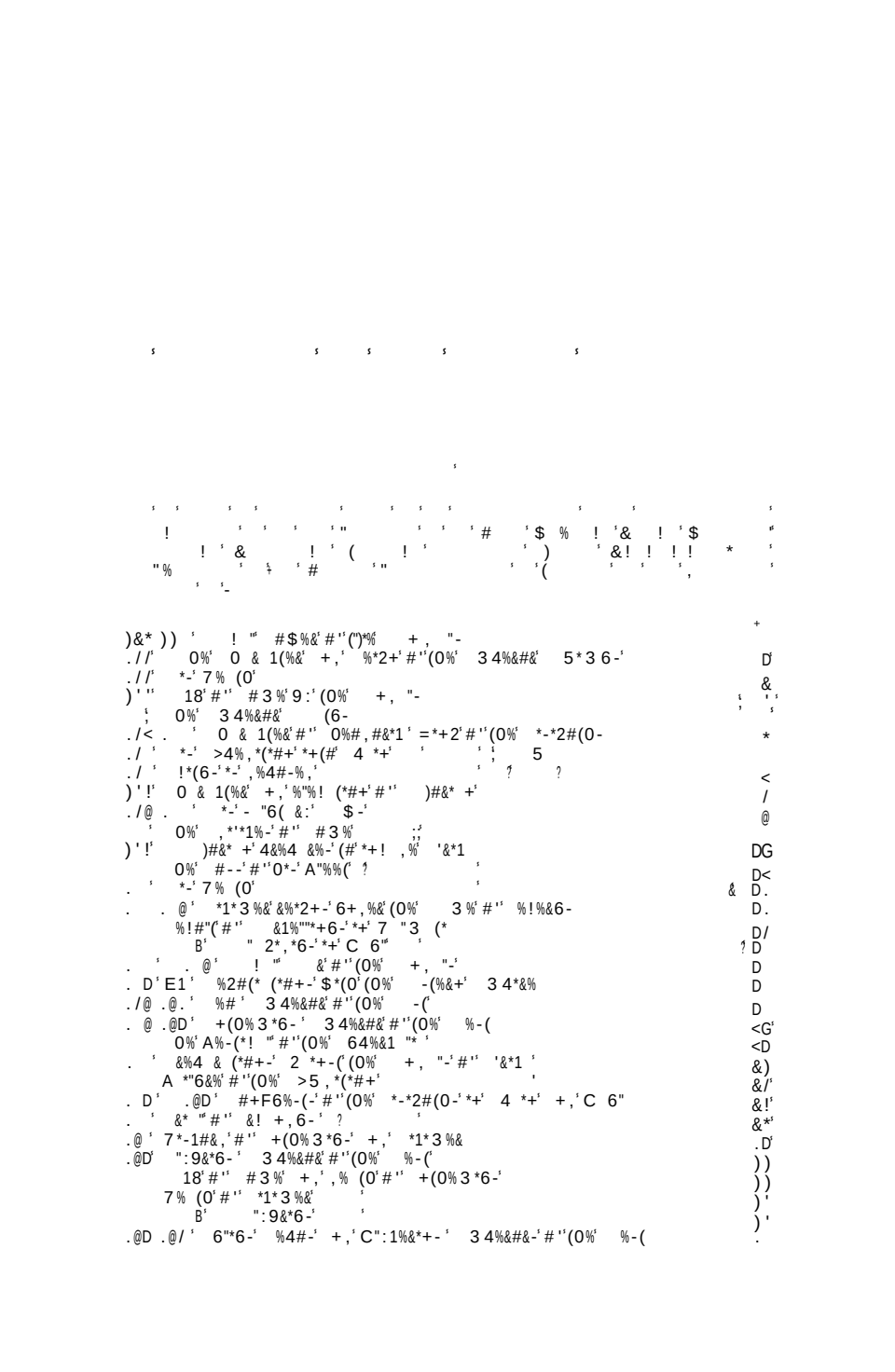
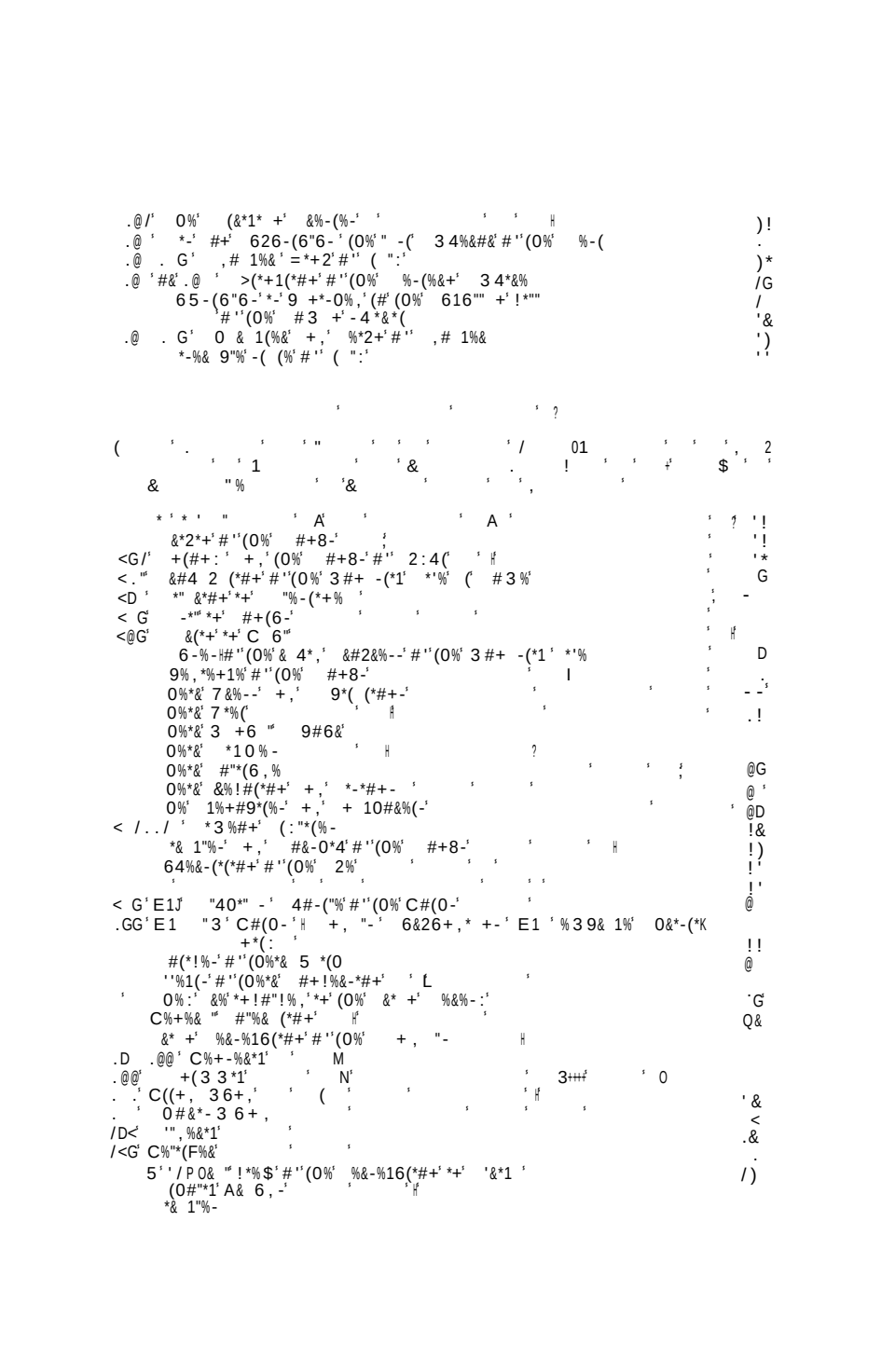
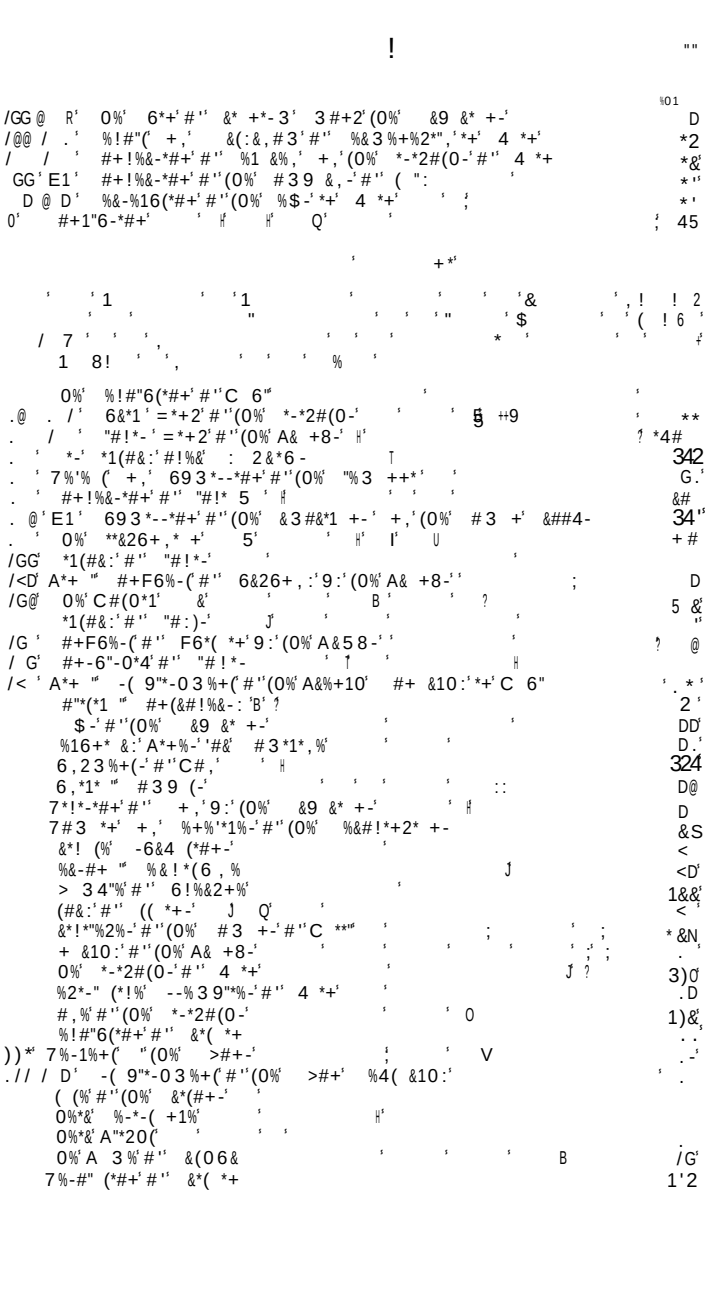
on 28 December, 2018







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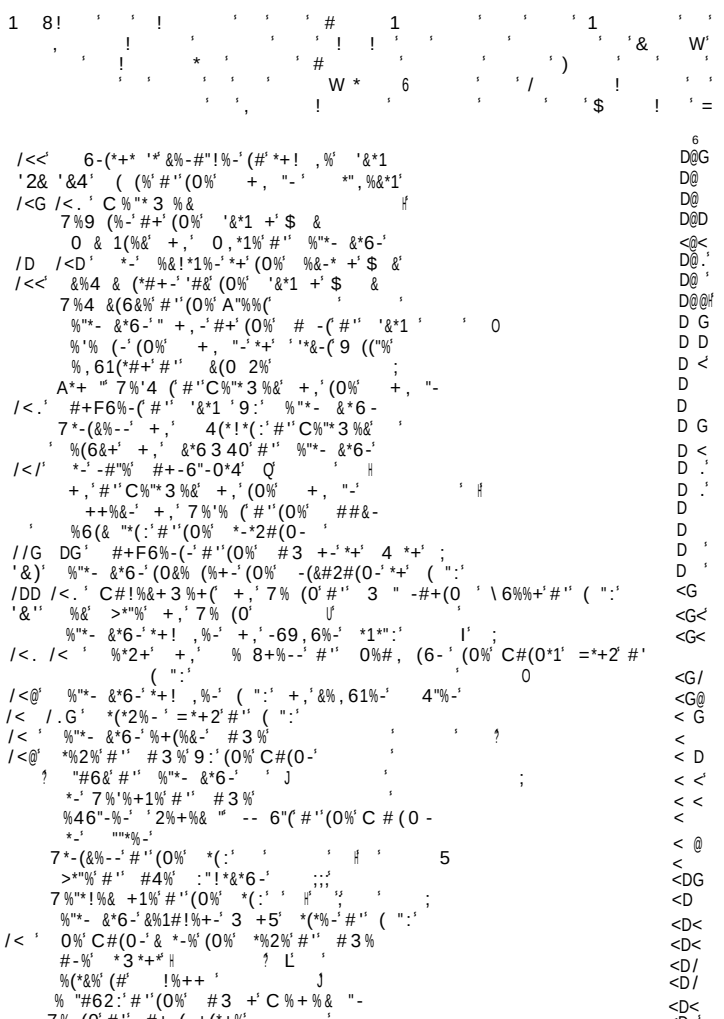

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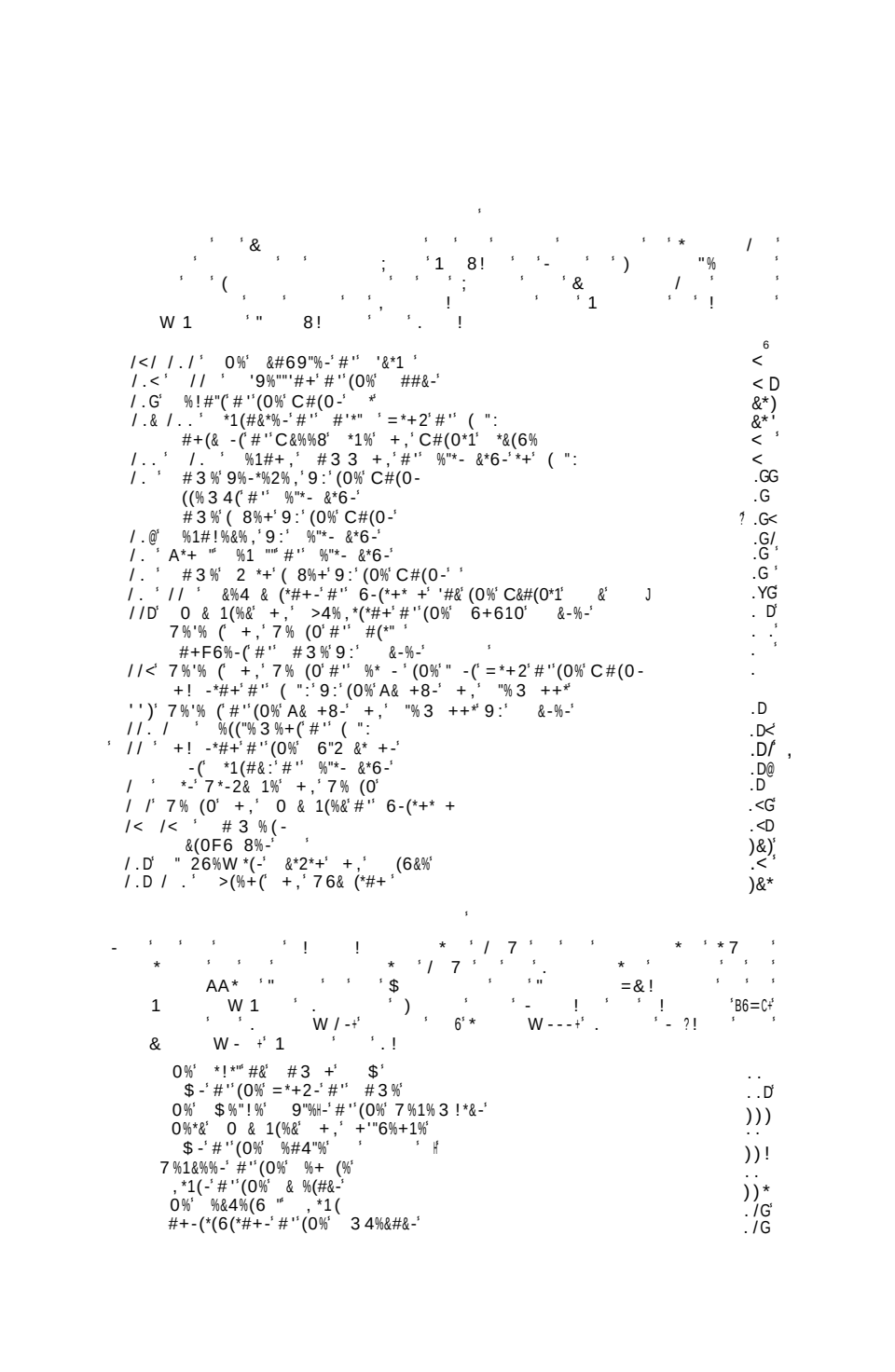

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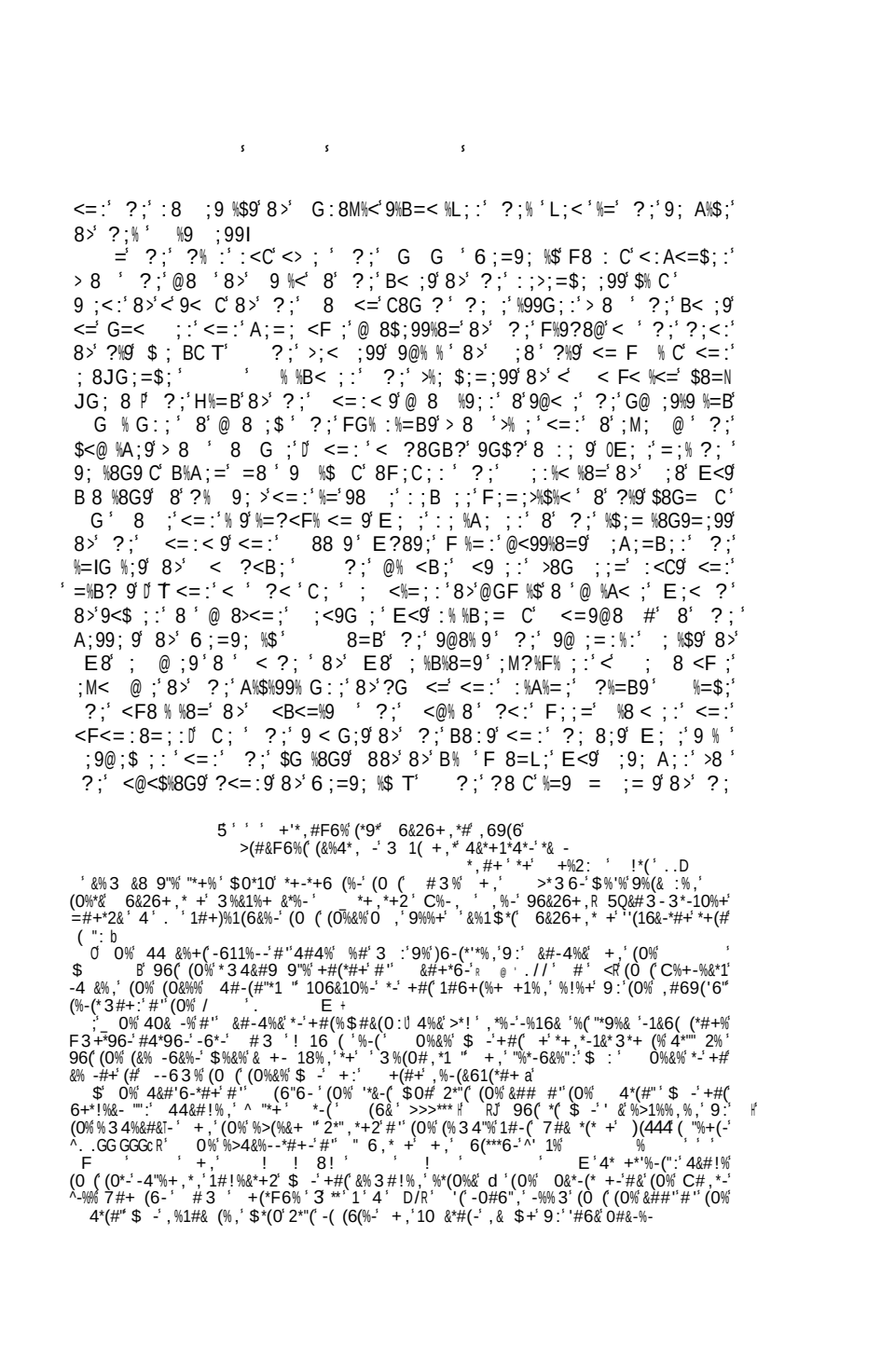

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+ʻ 0%ʻ2%+%& "ʻ%!*,%+1%ʻ'#&ʻ(0%ʻ,% (0ʻ#ʻ" >*+ (-ʻ +,ʻ(0%ʻ- 18ʻ#ʻ# 3%ʻ9:ʻ(0%ʻ +,ʻ"-ʻ *-ʻ 1# 3 4&*-%,ʻ *+ʻ *,#+*6-ʻ^ +%2:&ʻ !*(ʻ . . GRʻ &#1#4*6-ʻ^,1ʻ %""ʻ +,ʻ"ʻ 3 *ʻ 1ʻ . /ʻ 4ʻ ʻ +,ʻ 3 **ʻ 1ʻ ʻ 4ʻ D//Rʻ ! 2&*6-ʻ 3 **ʻ 1ʻ@Rʻ #&ʻ + +,%-ʻ^,%ʻ %9ʻ C%(*1*-ʻ1ʻ./ʻ4ʻ @@Rʻ +,ʻ(0% 0&#+*1"%-ʻ#"ʻ ,(*6-ʻ 4&#-4%&ʻ &1%""*+6-ʻ +,ʻ 0%#40 +%-ʻ6+,%&(0% 4&#4%&ʻ:% &

6ʻ 0%ʻ 4&*!(%ʻ"*'%ʻ +,ʻ %"%! (*#+ʻ#"ʻ *(6-ʻ 36-(9%ʻ,%,61%,ʻ $*(0ʻ 9%1#3*+2ʻ -6-4*1*#+ʻ '&# 3ʻ (0%ʻ 4 +%2:&*1ʻ 4&#+#6+1%,ʻ 9:ʻ *,#+)6-ʻ 4#" + &*-ʻ 0*-ʻ -69)%1(+,ʻ0*-ʻ-#+ *+ " $

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6>6&*#-% 2%&%ʻ !#"%+-ʻ ʻ-%+ (#&*96-ʻ 4&#)%1(6-ʻ%-('ʻ*5 (0%ʻ1#+1*-%ʻ%>4&%--*#+ʻ #''C&%2#&:ʻ#'' #6&-ʻ ^3 **ʻ 1ʻ >*ʻ *+ʻ(#3ʻ **ʻ 4ʻ Rʻ +ʻ #",ʻ ")&#+*1(%ʻ^*+ʻ(#3ʻ **ʻ 4ʻ .Rʻ 3%+(*#+-ʻ +ʻ*+,%1%+()%-('#'' !*(6-ʻ$0*10ʻ-%%3-ʻ3#&% 44'*1 9"%ʻ(#' #3%ʻ (0+ʻ(# &%!%-ʻ _ 0%&%ʻ*-ʻ+#'#(0%&ʻ%!*,%+1% 2 *+-('(0%ʻ3#& "10 & 1(%&'#'' !*(6-ʻ +,ʻC*99#+ʻ,#%-ʻ¯+#(-0#$ʻ0*-ʻ6-6 '"')6,*1*#6-+%--ʻ +ʻ 11%4(*+2ʻ*(ʻ %%' #",%& ʻ 22%&* %6%-ʻ &#0*!ʻ**ʻ 4ʻ D@.Jʻ #,28*+ʻ*('< < / ć

0ʻ *,#+*6-'^ +%2:&ʻ +(0%3ʻ< Dʻ E1Rʻ 4& *-%-ʻ(0%ʻ&#/& " 9*&(0'#'' (*3%>ʻ(0%ʻ " $'6" 0%*&ʻ -ʻ0%ʻ10##-%-ʻ(#*+-*+6 (%ʻ9#(0'#''(0%ʻC#(0*1ʻ +,ʻ 6%!*1ʻ8*+2,#3-J

+,

)*-\ <<:' % @8 <= ' 9; A%$;9' <B<%=9 ' ?;' $8 8=' ;=; C' ;=:; ;:' ?% ' 9 % ' 8 ;'>8 %:<F ;' D <=: ' <> ; ' :;9 8C%=B' 8=' ?;' $8<9 ' 8>' 8 9%$<' <' > ;; ' 8>' <=:<9 ' E?%$?' $8=9%9 ;:' 8>' 9%M C' B< ;C9 ' %$% ; ' ; G =;:' %=' %G @?' E% ?' ?;' <@@; < %8=' 8>' ?;' ;N %A; ; ' 8>' < C ' ;' $?89;' ?< ' 8 ;= ' 8' 9%B=%>C' 8' A% G9' ?<' ?%9' ;%B=' E<9' <' <=' ;=:' D <=:<' ?;' >;;F ;' ; @; 8 ' <' <' :%9 <=$;' Y ;@ ' $ \ > 8 ' ?%9' 6 8 ?%$' < %;9' E<9' $8 @; ;:' <> ; ' <' 9?8 ' <=:' G=D <A<% =B' 9 GBB ;' 8' <F:%$< ;' ?;' @G @ ;' C' ?;' $; ;=$C' ?8E;A; ' 8 ' ?;' $8= ; @ ' 8>' %$% ; T1' ?;' E<9' @; % ;:' 8' :;9$;=:' > 8 ' ?;' ? 8=;' 8' ?;' 8 ;' :;9% <F ;' 9 < %8=' 8>' F%9?8@' 8>' <$;= %<D' FG ' ?;' ;9;= ;=' 8>' ?;' 9;=< ;' E<9' 9 % ' G=N 9< %9>%;:' <=:' ?;% ' %=> ;M%F ;' 9;A; % C' @ 8=8G=$;:' ?;' 9;= ;=$;' 8>' ?%9' ;:<? ' ;' >;:' 8E< :9' ?;' @9' E% ?' ?;' ?G F ;' ?8@;' =8 ' 8>' < %=B' ?;' %9%B8 ?9' %=' ?%9' $<G9;' FG ' 8>' 9;$G %=B' ?%9' @; 98=' <=:' ;<9G ;9' %=' ?;' 9<=$ G< C' 8>' WG %<=' 8=;' 8>' ?;' G ;' <' 9<%= 9' 8>' GA; B=; T1' %9;<9;' 8 ' ?;' ?<=:' 8>' ?;' ;M;N $G %8=; ' < ;9 ;:' ?% ' 8=' ?;' 8<:D' C; ' ?%9' ; <%=9' E; ;' :;$;= C' <=9@8 ;:' 8' %A<9' 8 ' %8G:;' %=' ?%9' =< %A;' 8N A%=$;' <=:' ?;' ;@89;:' < ' ?;' >;; ' 8>' ?%9' ?8 C' @< #11' A% G9' > %=%% %% ;> ' 8= C' 1T' 8=;' :<GB? ; ' ?;' E%>;' 8>' %:8=%G ' @8 %=< %9' E?8' %=?; % ;:' ?;' @< % 8=C' 8>' ?%9' >; ?; 0%=0 <E' D < ;= %=B' <' ?;' 9< ;' % ;' ?;' :%9<@@8%= ;=' 8>' ?%9' @GF?$' <=:' @ %A< ;' ;M@;$0' < %8=9' %9' ;9;= ;=' @ 8 @ ;:' ?% ' 8' I8%=' 8' <' ;<9' 8' $8G= ;=<=$;' ?;' ;<9G ;9' 8>' <' ;F; %8G9' ><$ %8=' %=' 6 <G D <=:' ?;' @8; ' ?<:' $8= <$;:' 98 ;' BG% ' E?%$?' % ' E<9' %=$G F;=

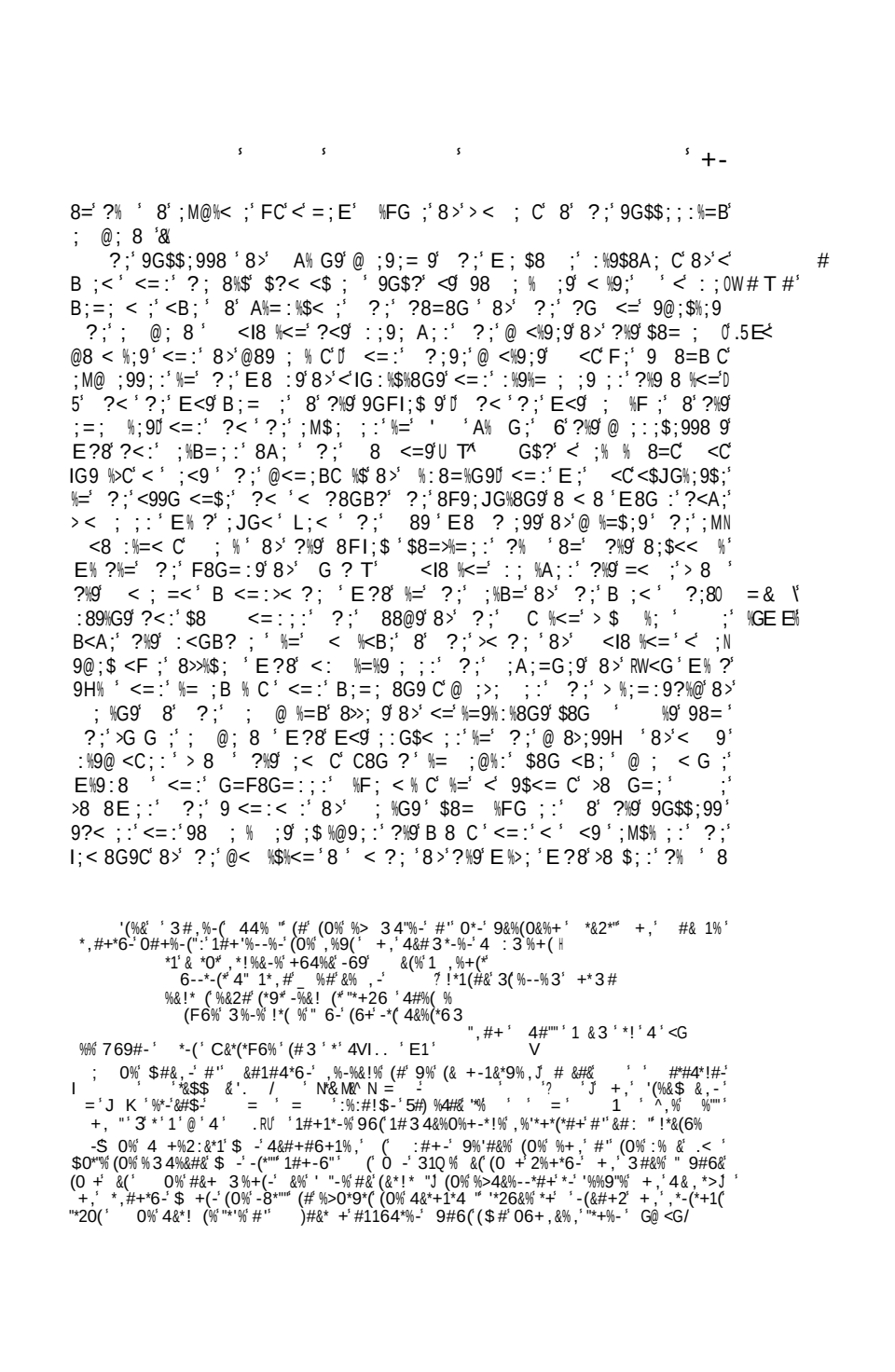
OZ %%' (0%' O&#+*1"%' #'' , (*6-' #&+ +,%-' ^1' . ' 4' @ R' -(:"%-' 0**+' $*(0' -#3%' (&6(0' !*&63' %2&%2*63 '%(' 4%+%(6+1'*+' ("* ' ,'% >%&1*(63' -*+26" &%3

O;' &1%+-' *++#1%+(* % !*(*' *-'(0%' 1#34 --*#+ (% 96(' 1#+(%34(6#-'" +26 2%' #'' *1(#&' 6++6+%+-*-' ^*+' O&#+' 46, ' 1 "*2%&' 6-%9 R' +' +#(0%&' 4" 1%' 0% 1 ""-'0*3' !*&' (#(*6-' -*34"*1*((* ' 0*-' 1#3 3%+, (*#+' *-' (+#(% ^)639"%' 96(' *(' *-' 3#&%' -#"* ;' +,' -*+1%&%' (0 +' (0% 4& *-%-' #'' *,#+*6- ' #3%' 6&(0%&' ,%(*"-' -'(# (0%' "" #'' !*(6-' &%', %&*!%, ' '&#3' #0+' #'' +(*#10' ^ (*_ %&' A' ' .V'&' DG W' ' P' #+-(+(*+* +' f' '& 23%+(J -%% 44%+, *>' *R' 0%' #3 0'4#46" 1%'9" 3%,'0*3' '#&' ' 3*+%' $0*10' 9&#8%' #6(' *+' (0% 1*(:J 0%' $ -' 1#34%"%,'(# ,*-9 +,' 9*-' *-*' 2#(0*1'9#, :26 &,' J (# 4 :' $0#3' 0 !*+2' +# 3#+%:' 0%' -(&*44%,' 469"*1'%, *'*1%-'#" (0%*&'1#44%& b

' %'-6''%&%, ' -' *(' *-'-644#-%, ' *+' (0% 4%&-%16(*#+' #'' *#1"%(* +' ^ *""%3#+(' %3' 11" -' (#3' !' 4' R' C&%2#):' #'' #6&-' 9*-' 4%16"* &' !#(&:' 0 -' ,%, *M (%,' (#' (0% 2"#&:' #'' 6"* +' (0% &(:&' +'%+(*&%' 9##8' e,% C"#&*#' &(:&63 ' **' *+' >' *9"*#(' (&63' (#3' >*' 4' @ R' ' ' $0*10' 0%' &%" (%- 9#6(' *'(:' '##"*-0' 3*& 1"%-' 4%&' #& 3%,' 9:' 0*-' &%"*1-

C&%2#&:' #'' #6&-' ^3 **' 1' >*' 4' * R' *-' 1#+1*-%' 96(' #&&%1(' *+' (0%' &%*' 3' #" 0*-' 1#6+(&<6+ +' 0%' $#&, -' #'' , (*6-' I1 &%(' *3 4%&*#' &%(%(' !*(8 f' -%% 3' (# *3 4":' (0 ((0%' ,% (0' #'' !*(6-' $ -' !*#"%+(') 9*0(*(3 6-(0 !%' 9%%+' -%1&%(' -*+1%' ! 2&*6-' ^ ' **' 1' @R' 1#6",' -644#-%' (0 (0%',%, ' #'' (0%' 4" 2 %

0'_ %' 0 ,' "-#' -#+' 1,*1*6-' $0#' -69-%F6%+(":' *-(*((26*-9%,' 9%3 -%"*' *+' (0% ,%'%+1%' #'' 6!%&2+%' *+' ')!)03



; % :' > 8 ' ?:'9; A%$; #' <I8 %<='<> ; ' ?:' : ;< ?' 8>' ; %G9' ,E<9 ;$< ; : '<=:' @ 8 8 ; :'D <=:' ?%9' %= % < ;' $8==;M%8=' E% ? $8G= ' %$?=; ' E<9' ?;' % ; :%< ;' 9 ;@' FC' E?%$?' ?;' <9$;=:;:' ?;' ? 8=;' 8>' ?;' ;9 ; =' ; @% ;' G %=B' ?;' A<$<=$C' ?<' 9G$$; ; : ; : ' ?;' <F:%$< %$ ' 8>' C% G9' ?;' < F% %8G9' < %<=' E?89;' F% ?' ;M$ G:;:' ?% ' > 8 ' ?;' @; %<' :%B=% C' B8A; =;:' < C' E% ?' ?;' % ;' 8>' < %$%<=D ;9%B=;:' 8' ?%9' > %;=:' ?;' $8=9@%$G8G9' 9 < %8='8>' <9 ; 0B;=; <'8>' ?;'$<A< C'<=:' %=><= C D <=:'<> ; '<=' %= ; A<' 8>' 98 ;' 8= ?9' $8=9;=; :' 8' ?;' G=<=%D =%8G9' E%9?' 8>' ?;' 8 <=9' E?89;' >% A8G ' <I8 %<=' ?<:' 98 %$% ; : FC' <' ;$;=' ,A%$ 8 C' 8A; ' ?;' ; <==% 1# ;' E<9' %=A;9 ;:' E% ?' ?;' @G @ ;' <' <A;==<'<=:' ?;' ;@%9 ;' E?%$?' ?;'<:: ;99;:' 8' ?;'9;=< ;' E% ' F;9 ' :;9$ %F;' ?%9' 9% G< %8=' <=:' ?%9' 9;= % ;= 9' 7' 8G ' ; ;$ %8=' 8=9$ %@ ' < ?; 9' ' <=:' ?;' 8 :%=<=$;' 8>' ?;' 89 ' A< %<= ' < C' ?<A;' <:;' ;' C8G ' ; @; 8 ## <C' ?;' @ 8@% %8G9' ;% C' :% ;$ ' <=:'@ 89@; ' ?;' $8=9G 9' <=:' ;A;= 9' 8>' C'<: %=%9 < %8=' 8' C8G '<:A<= <B;'<=:' 8' ?;' @GF %$' E; >; ;Z 8 ' C' 8E='@< ' ' :%:'=8 '<9@% ;' ' ?<A;'9GF % ;:' 8' ;%B=D =8 9?8G :' ' ?<A;' :%9$?< B;:' ?;' 8F %B< %8=9' 8>'<' $% %L;=' %>' ' ?<:' ;>G9;:' E% ?' 9;'<=:'9; >%9?' %%# < % G:;' 8' 9G@@8 ' ?;' E;#?' 8>' ?89;' <F8G 9' E?%$?' E; ;' % @89;:' FC' ?;' ;@GF %$' 99%9 ' ?; ;>8 ;' >?;' @ %=$;' E?8 ' C8G' ?<A;' <#'D @< <H;' ?;' :G %;9' E?%$?' C8G' ?<#A;' ;=I8%=;:D <=:' <C' $8 8=' ;=:;<A8G 9' @ 8 $;' ?;' ?<@@%=;99'8>'<=' ; @% ;' E?%$?' ' ?<A;'<$$;@ ;:'> 8 ' C8G ' ?<=:9' ;' <99G ;:' ?< ' %=' 8G ' % ;9' IG9 %$;' 9?< ' ;9G ;' ?; ' % $%;=' A%B8G ' <=:' ?< ' A% G;'9?< ' F;$8 ;' =8 ' 8= C'%==8N $;=' FG ' ; % 8 %8G9' ; '=8=;';M$;@ ' ?;' <G ?8 9' ?; 9; A;9' F;'<@@ ;?;=9%A;' 8>' .' E?%$?' <9' <' 9GFI;$ ' ' ?<A;' < E<C9

0%' 4&%--%,' 0*g' *3 3%,* (%' ,% (0' +,' $ -'-1 &1%":'- (*-'*%,' $*(0' 9*-' ,*-2& 1%' (' -0#6",' -%% 3' (0 (' %(*6-' "*8%' %"*- &*6-' +,' &"9#&#620 '? $ - 2#!%&+%,' d' 0*-' $*'%J' $0#-%' $!%+(' 4*%(:' (0#620(' *(' 3*20(' $#&8' 3*& 1"%-' ^C&%2#&' $#+' ' **' 1' @' 4' Da' $ -'+#(' *+1#3 4 (*9"%' $*(0' 9 -%' +,' - 026*+ &:' 1#6+-%"-' #' 0%' "%*+ ++' 0 ,' 4 --%,' (0%' 0-%(* +' "4-' +,' $%&%' ,%'% (%,' *+' (0%' 1 ' 1 '#&' 5"%:'#'' % *4[#+%' (0&#620' $0*10' (0%' %-*+' '"#$-' *+'*(-',%-1%+(' '&#3' #6+(' ,6" ' (#' (0%' 2#' 22*#&%' ^ "6!%&' ("*' +(*F' (#3 '*' 4' GG' "#*R' 0*-' 9# -(%,' !*1(#&:'#!%&' ' ! ' &9 &* +-' ^ +%2:&')#&* +' <@<' E1 R' 9%(& :-' (0%>(&% 3 %' $% 8+%--'#" (': 5 ? 6 34%& (#&% 3' 3 %' '*'1(6 3 ' ' %'%1(*#+*-' !%-(&-% &9*(&*#' %('#&(*--*3 #' %>%&' 1*(6-' #&,*+ (*#+%' 2+#-1*(%' ^ #!%"')#&* +' (*(' ***' 4' <.' ')1% 3' #,' 0%#,#- R' *,#+6(-' 4&#1" *3-' (0%' 6+ 3 3#6-' !#*1% 4"(0%' % 34*&% #-(F6 3' #&,*+%' !#9*- (,#' # 3 +*-' &%2 6 3',%,%' (J = ' ! ' E (' '-*3 6" W _ &3' /b' < 0*-' " +26 2% *-' +1*%+(' +,' 1#+-(*(6(*#+ "J +,' $%' 3 :' #9-%&!%' (0 (' (0% L' $%&%' +#(' :%(' 1#+-*,%&%,' -' ',*-(*+1(' 3&,%& ^&*(0%' -((% 5' *(0%&' '" (*#+%-' #&',, (*#+%-' $#6"' '' #&,' ' (#"%& 9"%' &% ,*+2J 96(' (0%&%' *-' 3 61 0' 3 #&%' -%+ % +,' -4*&*(' *+' (0%" ((%&'(#' $0*10' ' 0 !%' (0%&%'#&% 2*!%+' (0%' 4&%K '%&%+1%

$8=:; =;:ʼ <=:ʼ <gʻ <ʻ @ %=$;ʼ A %ʼ 9;A; ;Cʻ @G=%9?ʼ Gʼ 8E=ʼ A%B% <=$;ʼ <=:ʼ ?<ʼ 8>ʼ 8Gʼ >< ?;ʼ ?;ʼ @< %$%<=ʼ %$% ;ʼ 9?< ʼ ;BG <;ʼ < ʼ % % < Cʻ <%><% 9ʼ <=:ʼ @ 8A%:;ʼ >8ʼ ?;ʼ 9<>;Cʻ 8>ʼ ?;ʼ 8 <=ʼ E8 :ʼ E?%$?ʼ E;ʼ ?<A;:ʼ > 8 ʼ >8 ;%B=ʼ <=:ʼ :8 ;9 %$;=; %;91# 8Gʼ =8Eʼ G=:; 9 <=:ʼ ?;ʼ <M% gʻ 8>ʼ CʻB8A; = ;=Pʼ C8Gʼ <Cʻ $8=>%:;ʼ %=ʼ ?;ʼ ><% ?>Gʼ 8A;ʼ <=:ʼ 9%=$; ;ʼ <99G <=$;gʻ 8>ʼ<ʼ @ %=$;ʼ E?8ʻ ?<gʻ >8 ; Cʻ F;;=ʼ ?;I$8 @<=%8=ʼ 8>ʼ C8Gʼ %>;ʼ <=:ʼ :<=B; 9ʼ E?8ʻ 9 %ʼ B 8 %;gʻ %=ʼ ?;ʼ =< ;ʻ08>ʼ 9;=< 8ʼ <=:ʼ E?8ʻ %g <=M%8Ggʻʼʼʼʼ ?<ʼ C8Gʼ 9?8G :ʼ =;A;ʼ ;@;=ʼ 8>ʼ ?;ʼ IG:B ;=ʼ E?%$?ʼ C8Gʼ ?<A;ʼ @ 8=8G=$;:ʼ %=ʼ ?%gʻ >;A8G Uʼ ?;ʼ ; @; 8ʼ E?8ʼ < %:9ʼ ?;ʼ G%=gʻ 8>ʼ ?;ʼ 8 <=ʼ E8 :ʼ ;A%A;:ʼ ?;ʼ <=$%;=ʼ <=BG<B;ʼ 8>ʼ <Eʼ <=:ʼ %F; Cʻ E?%$?ʼ <I<=ʼ E8G :ʼ =8ʼ ?<A;ʼ :%$ <% ;:ʼ G9ʼ ?<A;ʼ :; %A;:ʼ ?89;ʼ B;=; 8Gg 9;= % ;=gʻ > 8 ʼ ?%gʻ 8Eʼ=ʼ ?;< D 9%=$;ʼ ?;Cʻ E; ;ʼ =8ʼ 9GBB;9;:ʼ 8ʼ ?%gʻ % % <%8=ʼ FCʻ ?;ʼ $G9 8 gʻ 8>ʼ?%gʻ <B;ʼ 8ʼ ?;ʼ;M< @;ʼ 8>ʼ?%gʻ @;:;$;998#T

?;ʼ @ %A< ;ʼ <=:ʼ @GF %$ʻ <$ %8=gʻ 8>ʼ <I8 %<=ʼ <;ʼ A; Cʻ % @; N >;$ Cʻ H=8E=Dʼ FG ʼ ?%gʻ <E9ʼ ; < H<F ;ʼ >8ʼ <=ʼ 8 %B%=<ʼ $<9ʼ 8>ʼ ?8GB?ʼ <=:ʼ ;M@ ;99%8=ʼ><% ?>G Cʻ ;@ ;9;=ʼ ?;ʼ$?<ʼ <$;ʼ 8>ʼ <ʻ 98A; ;%B=ʼ E?8ʻ 8A;:ʼ ?%gʻ @;8@ ;ʼ E?8ʻ 9C @< ?%L;:ʼ %=ʼ ?;%ʼ :%9N ;99ʼ E?8ʻ ?<:ʼ 9 G:%;:ʼ ?;ʼ $<G9;gʻ 8>ʼ ?;ʼ:;$ %=:ʼ 8>ʼ ?;ʼ; @% ;ʼ <=:ʼ E?8ʻ E<gʻ $<@<F ;ʼ 8>ʼ<@@ C%=Bʼ R<gʻ >;ʼ <gʻ 9G$?ʼ ;>8 < %8=ʼ E<gʻ @ <$ %$<F ;Sʻ IG:%$%8Ggʻ <=:ʼ ;>>;$ G#ʼ ; .T;gʻ 8ʼ ?;ʼ @GF %$ʻ :%90<0=ʼ.0)%ʻ 8 :;9#Tʼ %gʻ ;BG < %8=gʻ $8=$; =%=Bʼ ?;ʼ >%=<=$;gʻ <=%>;9 Cʻ ;=:;:ʼ 8ʼ ; 8A;ʼ 8ʼ <ʼ ;<9ʼ 8ʼ % %B< ;ʼ ?;ʼ 89ʼ %= 8;<F ;ʼ B %;A<=$;9ʼ ʼ 8 ʼ ?;ʼ >% 9 0?8G ʼ 8>ʼ ?%gʻ 8E=ʼ ;%B=ʼ ?;ʼ E<gʻ 98 %$% 8Ggʻ R ʼ <=9 <;ʼ ?%gʻ 8E=ʼ E8 :9Sʻ 8ʼ ;%;A;ʼ ?;ʼ 8 ʼ >8 N G=;gʻ 8>ʼ ?;ʼ @ 8A%=$%< 9ʼ 8@@ ;99;:ʼ FCʻ ?;ʼ <$$G G<;:ʼ E;%B?ʼ 8>ʼ%:%$ %8=gʻ <=:ʼ 9G@; %=:%$ %8=9##ʻ % ?ʼ ?%gʻ A%;Eʼ ?;ʼ B <=;:ʼ <=ʼ G=%A; 9<ʼ< =;9 Cʼ<ʼ>%=<ʼ<=:ʼ<F98 G ;ʼ:%9$?< B;ʼ8>ʼ< ʼ< ;< gʻ Y.ʻDʻ 8>ʼ %FG ;ʼ 8>ʼ < ʼ :;F 9ʼ E?%$?ʼ G=:;ʼ <=Cʻ @ ; ;=$;ʼ ?;ʼ >%9$<

DÐ 9ʼ%>(%&+#0#-(%'%(ʻ ,#3%-(*15'1" ,%'"*9%& !*36-'Ù 9:ʼ(0%" ((%&')#&*+ʼ 36-(6+,%&-(+,ʼ(0%ʼ(:& ++:ʼ#"ʻ !*(6-ʼJ $0#-%ʼ,% (0'0%ʼ1#+-%F6%+("ʼ !#$%,ʼ -ʼ 3%&*(#&*#6-ʼ 1(ʼ +ʼ(0*-ʼ#11 -*#+ʼ *,#+*6-ʼ*-ʼ'% &'6"# +,ʼ #9-16&%ʼJ 0%ʻ ,%-1&*9%-ʼ (0%($%"!% -- &-ʼ(0%ʼ+(*#+-ʼ#"ʼ '&*1 ʼE1ʼ(0 (ʻ 0%ʼ 3:'%-1 4%(0%ʻ ,+2%&#6-ʼ + 3%#"ʼ !*(6-ʼ^<G/< R

Nʼ %%ʻ(0%ʻ$0#"%ʻ%,*1('#&'%4*-("%#"ʼ)#&*+ʼ(#ʼ(0%ʻ-%+ (%^ #!%""ʼ(*('*!ʼ4ʼ<.R %(ʼ(0%ʻ%>4&%--*#+ʼ ! ʼ ! ʼ9% &-ʼ-#3%ʼ(*+(ʼ#"(0% 2%ʼ +,ʼ,#%-ʼ+#(ʼ3*>ʼ 8*+,":ʼ$*(0ʼ(0% $#&,ʼ !E ʼ$0*10ʼ0%ʼ'&%F6%+("::ʼ&%4% (-

Mʼ %%ʻ(0%" $-ʼ#"ʼ)#&*+ʼ^(0%:ʼ &%ʻ#+":ʼ+*+%ʼ96(!%&:"#+2ʼ +,ʼ! &*#6-Rʼ ((0%ʻ%+,ʼ#"ʼ(0% 0%#,#-* +ʼ #,%ʼ #!%""ʼ3ʼ*!ʼ4ʼ<D <@ʼ C#,%'&#:ʼ 0 -ʼ+#(ʼ2*!%+ʼ +:ʼ1#3 3%+(&:ʼ#+ʼ(0%-% ,,*(*#+ʻ*4*%1%-

=ʼA%-- -ʼ4&#!*+1* "*63ʼ! &* ʼ (F6%ʻ36"(*4"*1ʻ (&*96(#&6&ʼ%> 1(*#+%ʻ'#&(3* -ʼ%(%>(& #&,*+ &**-ʼ'*-1 "*63ʼ-#*6(*#+63ʼ#+%&*96-ʼ ((&*(-ʼE1ʼ #!%""ʻ)#&*+ʼ(*(ʼ *!ʼ4ʼ<.

Sʻ(''3#&%ʻ(0 +ʼ%"%!%+ʼ:% &-ʼ-(+,*+2b

./%0l2ʼ ʼ 3

+)

8>' ?;' ;M ; ;' $<9;g' E?%$?' %B? ' IG9 %>C' ?;' :;9 G$ %8=' 8>'<=
<=$%;= ' ; : %>%$;D % @89;:' <' >%=;' 8>' >% C' @8G=:g' 8>' B8 :' R E8
F8<9<=:' @8G=:g' 9 ; %=BS' 8=' ;A; C' <B%9 < ;' E?8g' 9?8G :'
@ ;9G ;' 8' B <= ' 9G$?' % ;B< ' <=:' 9$<=:<8Gg' %$;=$;D <=:'
? ;< ;=;:' 8' $?<9 %9;' ?;' $ % %=<' 8F;:%;=$;' 8>' ?;%' 9GF8 :%=N
< ;' 8>>%$; 9' FC' <' 9;A; ;' E?%@@%=B' <=:' ?;' < @G < %8=' 8>' F8 ?'
?;%' ?<=:9' %=' ?;' <9' %=9 <=$;' ?;' ;B%9 < G ;' %B?' 9;; '
8' >8 B;' ?;' @ 8@8 %8=' 8>' BG% ' <=:' @G=%9? ;=D FG' ?%g' L;<'
< 89;' > 8 ' <' B;=; 8Gg' @ %=$%@ ;' <=:' <I8 %<=' E<g' <=M%8Gg' 8'
@ 8 ;$' ?;' 8=G ;= g' 8>' ?89;' <B;g' %=' E?%$?' ?;' E8G :' ?<A;'
:;9% ;:' <=:' :;9; A;:' 8' %A;' ?;' ; @; ' $8=$;%A;:' ?<' %'
<g' ?%g' %= ; ;9' 8' %=$;<9;' ?;' =G F; ' 8>' ?%g' 9GFI;$ 9D ?<' %'
E<g' ?%g' :G C' 8' BG< :' ?;' @G % C' 8>' ?;' < %<B;0F;:D FG' ?;'
;<=g' E?%$?' ?;' ; @ 8C;:' @' <$$8 @ %9?' ?;9;' 9< G < C'@G @89;9
Y1/].\' < ;' 8>' <=' < F%BG8G9' <=:' @; ?<@g' ;M$;@ %8=<F ;' H%=:' ?;'
@%8Gg' <%:9' E?8' $8=9;$ < ;:' ?;%' A% B%=% C' 8' ? %9' E; ;'
;9 <%=;:' > 8 ' <H%=B' ?;' A;%' % ' ?;C' ?<:' ;<$?;:' ?;%'
>8 %; ?' C;< ' %:8Eg' G=:;' ?< ' <B;' E; ;' $8 @; ;:' 8' >8 '
<' 9;$8=:' < %<=$;' E% ?%=' ?;' ; ' 8>' >%A;' C;< 9' FC' ?;' >8 >;% G ;'
8>' ?< >' ?;%' E;< ?' 8' ?;%' % ;< ;9' ; < %8=g' 8' 8' ?;' 9 < ;'
=;JG<' < %<B;g' E; ;' 8=:$=%=;:' 8' <==G ;:' ?;' @G=%9?N
;=' 8>' $8=>%9$< %8=D <=:' ;M%;' E<g' :;; :' 98' %=<:;JG< ;' 8'
?;' BG% ' 8>'<:G ; C' ?< ' %>' ?;' $ % %=<' ; G =;:' 8' <C' ?;'
% %B?' FC' ?;' ;M@ ;9g' :;$ < < %8=' 8>' <IV=M<=' F;' 9 <%=' E% ?'
==@G%% C T1
; @80 ?%;' ?;' ; @; 8' <I8 %<=' <99%:G8G9 C' <F8G ;:' 8' ;9 ;E;'
?;' ?<@@%=;99' <=:' A% G;' 8>' ?;' 8 <=9' ?;' ;=$8G= ; ;:' ?;'
< g' 8>' 6 ;=9; %$' > 8 ' ?%g' $?< <$; ' <=:' 9% G< %8=' ?;%' 89'
>8 %:<F ;' ;=; C' &' > ;; ' 8>' <=:<' g' <=:' 88 g' <=:;:' <'
?;' 8G ?' 8>' ?;' % %9' 8' 6< %B %<=8'D FG' ?;' @; %<' 88@g'
9G @ %9;:' <=:' < <$H;:' ?;' :%98 ;; C' < F< %<=9' E?8' E; ;'
;=$G F; ;:' E% ?' ?;' 9@8% g' 8>' < @<=%<D ?;C' E; ;' $?<9;:'
E% ?' 9 <GB? ;' 8' ?;%' 9?%@9' <=:' ?;%' ;<:;#' ?;' H%=B%9
F 8 ?; 0%=0 <E' E<g' >8G=:' %=' ?;' =G F ' 8>' ?;' 9 <%=' G$?

,*+*6+(6&' *+1') 3'#11 -*#' + - *(!*&' 6(' %() 3' 6+#-F6*-F6% 4&*! (6 3' -%,*'*1*6 3'
1#+-(&6%+-' 4%&' 2 3(* 3M)6,*% (+' ' 4&%% 6+(%&% ,%' 469'*1*#' "#1*-' +%1%-- &* ' 5'
(& +-'%&&%' +#+' ,69*(%(f' E1' #)(O' NF6 '' Y% ' 96(' *(+' "%--' 4#$%&' %(& &10' *+'
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4' <D ' <D@R' '' ' 4& -%#6(' (O*-' *-(#&:' ' -0 "" 4#(' 9% 6+3*+,'6" #'' (O% ,%1"*+%
+,'' "" #'' (O% #'' # 3 %J +' *+(%&%-("+-" #9)%1(' (# $0*10' 3 :' 4" +' $ -' #&*2*+K
"":' 1#+'*+%,' _E%'%'* 4' (# (b
P' 0%'%3 4%&#& 10*,%-' (0%' "%+*(:' #'' #2 (* +' 1#+-6" &#'' 6-1 +:' *+' -(:"%' #"
1& 3#+*#6-' &%4&##'' $0*10' #6+,-' "3#-(' "*8%' 4%&-#+ '' &%-%+(3%+(' ^ #!%"" ' (*('
>' 4' .@R' 0%' " $' #'')#& +' 0*10 46+*-0%,' #9-(*+ (%' $*,#$-' $ -' -##+'
'(%&$ &,-' &%4% "%,' 9:' "" -' -611%--#&' '%!%&6-' ^ #!%"" ' %!%&' (*(' *' 4' <@R
5' %:8=' <=;BC ' <I8 %<=' &" '0))4

A%B% <=$;' %B? ' <==8G=$;' ?;' $?< <$; '8>' ?;'=;E' ;%B='D FG ' ?;'9 %$;9 ' A%B% <=$;' <=:' ?;' 89 ' =G ; 8G9 >8 $;9 E ; ;' %=1' 9G>>%$%;=' 8 @ 8 ;$ ' ?;' 8=B0;M ;=:;:' <9' 8>' < C > 8 ' ?;' :;@ ;:< %8=9 8>'<'=<A<' E< ' ?;' @GF %$ @%=%8? ?<:' % @89;:' <' =8F ; ' <=:' 8 ;' < :G8G9 <9H' 8=' ?;' B;=%G9 8>' <I8 %<= 8 ;' ;M@;$;:' > 8 ' ?% ' < 8=;' ?;' ;9 % G %8='8>' :0> T' 0 ?;':;9%B='E?%$?' ?;'>8 ;:' 8>' < <$H%=B' ?;' <=:<9' %=' ?;% ' =;E' 9; ; ;=9' E<9' ?;' ;9G ' 8>' F8 :' <=:' IG:%$%@89' @8 %$C1 >' ?;' %= ;@%:' ; @; 8 '$8G :' ?<A;' %=> %9;:' ?%9' 8E='9@% % ' ?% V0 ?;' C8G ?' 8>' < C D %>' ?;' $8G :' ?<A;' ;A%A;:' %=' ?;' >%;:' 8> < 9' ?;' <= C' ;M; $%9;9' %=' E?%$?' ?;' ?<:' < E<C9' 9= @<99;:' ?%9' ;JG< 9' D ?;' %B? ' ?<A;' < $?;:' <B<%=9 ' 6 ;=9; %$' < ' ?;' ?;<:' 8>' <' ' < C' G$?' <' ;>8 < %8=' =< %8=<' 8==;%9' %B? ' F;' ; F <$;:' FC(?:' %9%=B' B;=; < %8=D FG ' % ' 9 ?;' %9>8 G=;' 8>' ?89;' @ %=$;9' E?8' <F8 %8G9 C' 9G9 <%=' <' :;$ %=%=B' 8=< $?C' ?< ' 8' 8F <%=' 98 ;' % ;:%< ;' <:A<= <B;' 8 ' 8' <A; ' 98 ;' % @;=:%=B' :<=B; ' ?;C' < ;' >8 $;:' 8' $8G= ;=<=$;' <=:' ;A;=' 8' G %@ C ' ?;' 89 ' @; =%$%8G9' <FG9;9' <I %<=' %H;' ?;' E;<H;9 '8>' ?%9' @ ;:;$;998 9 ' E<9' ;:G$;:' 8' ?; :%91' B <$;>G ' ;M@;:%;=' 8>' 9GF9 % G %=B' < F< %<=' <GM% %< %;9' %=' ?;' @ <$;' 8>'?%9' G=E< %H;' 9GFI;$ 9D <=:' ?%9' 9G@; %8 '<F% % %;9' $8G :' 8= C' F;' :%9@ <C;:' %=' ?;' A%B8G ' <=:' :;M ; % C' % ?' E?%$?' ?;' E%; :;:'<':<=B; 8G9'%=9 G ;= '98'<@ ' 8' ;$8%'8=' ?;' ?<=:' ?<' G9;:;% ' ;9%:;9' ?;' $8=>;:;< ;9' E?8' E; ;' < ;<:C' ;=B<B;:' %=' ?;'9; A%$;'8>' ?;' ; @% ;' ?;'><' ;'8>'?%9' %F; < % C'<=:'A< 8G ' < <$;:' ?;' =< %8?9' 8>' ?;' <=GF;' ?;' 8 C9 ?;=;9' <=:' @; ?<@9' 8>' ?;' <=<%9' <=C' ?8G9<=:9' 8>' ?;'F <A;9'9GF ; 9' 8>' % <' ?;' 6;@%:9;' ?;' 9 8B8 ?9' ?;' GB%<=9' ?;' 5&6 BG=:%<=9' ?;' G;A%' ?;' <=%' <99; F ;:' %=' ?;' @ <%=9' 8>' %BG %<D <=:' ?;% ' >8 %:<F ;' 9 ;=B ?' E<9' F< <=$;:' FC' ?;% ' G G<' <=% 89% %;9 T1' ?;C' @<99;:' ?;' @9' %=' <' ;A; ;' E%= ; ?;' ; @; 8 ' ;:' ?;' E<C' 8=' >88 ' <=:' %=' $8 @ ; ;' < 8G D 98G=:%=B' E% ?' ?%9' 8=B'9 <>>' ?;' :;@ ?' 8>' ?;' %$; ' J '9=8E ' <=:' ;=$8G <B%=B' ?;' $C ?%<=9' E?8' $8 @ <%=;:' 8>' ?;' ;M ; ;' $8 :' FC' ?;' $?;;>G ' <99G <=$;' ?< ' ?;C' 9?8G :' F;' 9< %9>%;:' E% ?' ?;' ?;<' 8>' > %$<' ?;' $% %L;=9' 8>' C <%9' ?< >' @ ;9G ;:' 8' # G #9 .9. ' ?;% ' B< ;9 ? ;C' 988='% @ 8 ;:' <=:' ;M@; %;=$;:' ?;' $; ;=$C' # 8>' <I8 %<=' ;' A<=JG%9?;:' ?;8:8 %$' % %' ?;' >%; :D <=:

=' O%' &%!*%$'#'' (O%' &3:' +,'4 -- 2%'#'' (O% "4-'1#+(*+'(O%' &##-(' (#"%& 9"% 4 52%-'#'' (O%' +%5&*1' MN5 6F GH' ' 6 (^ *-(,%-' %64"%-Q' %(1 ' (#3

'%&&*+2'(#' 1 34 *2+'*+' ++#3 ' +#((#(+%'%5'4%,*(*#+'* #&2 +*-((*"" ' !" '(%&'5')#&* +!-'-611%--'6" $ &' $*(0'(O% *-*24(0-

s s s

<: % ; :' 8' ?%9' > %; = : 9?%@' <=: :' < %<=$;' <' H%=B' E?8 ' ?;' ?<: ' >8G= :' =8 ' G=E8 ?C' 8>' ?%9' < 9' ; ?;' F;=;>%;%< ' ?8GB?' @ ;N $< %8G9 ' W G=%8=' 8>'0 ?;' B ;< ;9 ' @< ' 8>' 6<G ' <=: ' @<%=' E<9' ?;' ;>>;$ ' 8>'@; 9G<9%8=' <9' E ; ' <9' 8>' >8 $;D <=: ' ?;' %=: ;@;=: ; = ' <B<G:9;' E?8' ?<: ' ;9$<@; : ' 8 ' ;9%9 ; : ' ?;' 8@@ ;99%8=' 8>' >8 ; ' ;%B=9' E ; ;' : %9@89; :' 8' $8=>%: ;' %=' ?;' A% G;9' 8>' <I8 %<=' %9' $< @' E<9' >% ; :' E % ?' < F< %<=' < %; 9D ?%9' ? 8=;' E<9' 9G@@8 ; :' FC' ?;' L;<' 8>' <=' <>>;$ %8=< ;' @;8@ ;D FG ' ?;' ; @; 8 ' ?<:' >8 ;N 9; ;=' ?< ' % ' E<9' % @899%F ; ' E % ?8G ' <' < % % ;' @8E ; ' 8' <$?%;A;' ?;' $8=JG;9 ' 8>' > %$<' =' ?;' >% 9 ' G=%$' E< ' ?;' ;@GF %$' ?<: ' ;M ; :' 9G$?' %=$; : %F ;' : % %B;=$;' ?< ' E % ?%=' 9%M C' : <C9' <> ; ' ?;' >% 9 ' 9 8H;' 8P>' ?;' <M ' ?<: ' F; ;=' B%A;=' %=' ?;' >8 ;9 ' <' > ; ; ' 8>' 8=;' ?G= : ; :' <=: ' 9%M C' B< ;C9' @ 8G: C' 8: ;' < ' <=$?8 ' %=' ?;' 9;<TT' = : ; ' $% $G 9 <=$;9' G$?' ;99' ><A8G <F ;' <I8 %<=' ; JG< ; :' ?;' p@% % ' <= : '@; 9;A; <=$;' 8>' ?;' <=$%; = ' 8 <=9' ?;' E88 : 9' 8>' ?;' @; ==%=;' E ; ;' >; ; : D ?;' < 9;=< 9' <=: ' <=G><$ G ;9' 8>' <A;==<' <=: ' %9;=G ' E ; ;' ;9 8 ; : D < C' <=: ' 6<G ' A%; : ' E % ?' ;<$?' 8 ?; ' %=' %F; < ' $8= %FG %8=9' 8' ?;' @GF %$' 9; A%$;' D <=: ' ?;' @; %<' =<AC ' 8>' ? ;' ?G=: ; :' < B;' B< ;C9' E % ?' <=' <: ; JG< ;' @ 8@8 N %8=' 8>' <=9@ 9' <=: ' 9 < ;' A;99; 9' E<9' $8 ;$; :' %=' ?;' 9; $G ;' <=: ' $<_/$%8G9' ?< F8G ' 8>' < ?<B;=<' %=' @<%= T1' ?;' %= ;@%: ' $8G= ;=<=$;' 8>' <I8 %<=' <=% < ; :' ?/9' 88@9' E % ?' <' $8=>%: ;=$;' 8>' A%; 8 I>D <?: ' >>' E ;' %B? ' $; : % ' ?;' ?%9 8 %<=' 8$8@%G9' ?%9' $8G <B;' 98 ; % ;9' ?G %; :' ?%=%' F; C8=: ' ?;' F8G=: 9' 8>' @ G: ;=$;' =M%8G9' 8' ;M@ >E$' E % ?' ?%9' 8> % ;C;9' ?;' 9 < ;' 8>' ?;' <=: < 9' ?8' A;= G ; : ' <> ; ' : %9BG%9%=B' ?;' $8 8G ' 8>' ?%9' ?<% ' 8' A%9% ' < ?<B;' %=' ?;' $?< <$; ' 8>' ?%9' 8E=' < F<99<: 8 D <=: ' 6 ;=9; %$' E<9' <> (E< : 9' >%; :' FC' ?;' : %9$8A; C' ?< ' ?;' ?<: ' ;= ; N <%=; :' <=: ' : %9 %99; :' ?;' ; @; 8 ' 8>' ?;' 8 <=9' G$?' <=' <=; $: 8 ;' <C' F;' ;I;$; :' <9' <=' % @ 8F<F ;' >%$ %8=' ' FG ' % ' %9' <

')')'^"*&' Q #Q-' ' *-' (0%')6-(' + ,' '#&1*9"%' ,*-(*+1(*#+' #'' &*-16-^2>1%&4(' 4' .<' _'&' *@b' *+' '-0#&(' & 2 3 %0(' $0*10' (0&#$-' 3 610' "*20(' #+(0%' 0*-(#&:' # '') &* #&+ +,%-' 0 -' -644&%--%,' (0%' ,%'% (+,' ''"* +1%' #'' (0% *-*2#(0-' $0*10' %&% -#"%3+":' 4&#1" *3%,' *+' ""*1* ' +,' &%' 3 &8%,' *+' (0% 0&#+*1"%' #'' , (*6-'_]' 0 @' 4' < ' %, ' ,#3#--%(("

' *A"#& -' 3' **' 1' ' %' 36-%-' 0*3-%"' $*(0' (0% 4#%(*1 -+ :' (0 ((0%' (&%%-' 0 ,' 9%%+' (& 0-'#&3%,' *+(#' -0*4-' +,' *+,%%,' (0% $0#"%' (& +- 1(*+' -' *(' *-' &%" (N" *+' (0%' *&-(' 9###8' #'' #": 9*6-' ,%!* (%-' 9 :' 3 610' '&#3'(0%' 4&#9 9"%' 1#6&-%' #'' 06 3 +' %!%+(-

'-' +(%&% ' ,64"*1' (%>*-' ,6& ' "*((#&%' 1" - %3
+'%&+#' -64%&#F6%' 3 &*' 1 ,*"' #3+*-' *+' 3 6#&
*"! ' (*9*' E1(W W

,#+' +%2:&')#& +' . . ' 0%' +6 3 9%&' #'' -0*4-' $0*10' &*-16-' '*>%-' (' <G' *-' 3 2+*'*%,' 9:' +' *+,%'*+*(%' 1# 3 K 4 &*-#+' $*(0' (0%' '"%%(-' #'' 2 3 %3+#+' %&>%-' 0,' 626-(6-

>%$ %8=' E?%$?' E8G :' =8 ' ?<A;' F ; ; =' %% <B <; : I' G= ;99' %=' ? ;' %>;' 8>'<' ?; 8 T#
% ?8G ' ?;' ?; @' 8>' <' @; 98=<' %= ; A%; E ' 6 ;=9; %$ E<9## T 1' 9G>>%$%; = C' <$JG<%= ; :' E% ?' ?;' B;=%G9' <=:' : ;9%B=9' 8>' ?%9' <:A; 9< C' ;' @ <$ %9; :' ?%9' $G9 8 < C' < 9' 8>' ? <G:' <=:' : ; <C' FG ' ?;' @ <$ %9; :' ?; ' E% ?8G ' 9G$$;99' %9' <@@ %$< %8=9' >8 ' @;<$;' F;$< ;' ;<$?' ?8G ' 8 ;' 9GF %99%A; ' <=:' @; ?<@9' 8I$;' 9%=$; ;' I' FG ' ?;' %=> ;M%F ;' <I8 %<=' F<:' <:8@ ; :' ?;' <=$%; = ' <M% ' ?< ' 8 ;' $8G :' =8 ' F ;' 9<>;' <9' 8=B' <9' < ?<B;' ;M%9 ; :' %=' <' ?89 % ;' 9 < ; ' ?;' H%=B' 8>' ?;' <=:< 9' :%9 G9 ; :' ?;' A< 8G ' 8>'?%9' =< %A;' 9GFI;$ 9 ' E?8' E ; ' ;=; A< ; :' FC' ?;' GM<IC' 8>' ?;' 8G ?I' ?;' 9G9@;$; :' ?;' >%: ; % C' 8>' ?;' A<=JG%9?; :' @;8@ ; ' E?8'<F?8 ; :'?% '<9' <=' %<=' C <= I' <=:' ?;' : ;9@; < ;' ;<9G ;' E?%$?' ?;' ;M;$G ; : ' 8>' ; :G$%=B' ? <G % <=%<' %= 8' <' :;9; T1# $8G :' =8 ' : ;>;< ' ?;' 8@; < %@=9' 8>' ?;' 8 <=' ; @; 8 1 ?8 E<9' < ' %F; C' 8' <=:' ?%9' 88@9' 8=' <=C' @< ' 8>' ?;' > %$<=I' $8<9 ' G ' 6 ;=9; %$ E<9' 9<A; :' > 8 ' % @;=:%=B' %:' %=;A% <F ;' G%=' FC' ?;' ;<$?; C' 8>' 98 ;' @8E; >G ' 9GFI; 9' ;=A%8G9' 8 ' <@@ ;?;=9%A; ' 8>' ?;%' <9 ; %9' 9G$$;99' 6G%: ; :' FC' ?;%' 9;$; ' %= ; %B;=$; ' ?;' 9G @ %9; :' ?;' G=BG< ; ; :' > ; ; ' %=' ?;' F<C' 8>' < ?<B;@<' I' <=C' 8>' ?;' 9?%@9' E ; ' 9G=H' 8 <H %' 8 ' FG = I' <=:' ?;' @ ;@< < %8=9' 8>' ? ;' C;< 9' E ; ;' : ;9 @C; :' %=' <' 9%=B ;' :<CTT' > ; ' ?%9' ;A;= ' ?;' F;?<A%8G ' 8>' ?;' E8 ' <= <B8=%9 9' 9?; E ; :' ?; ' 9G@; %8 ' 8' ?;%' >8 G=; ' ?;' % :< ' %=9 ;<:' 8>' F;%=B' ; < ; :' FC' ?%9' <$$%: ; = < ' A%$ 8 C' % ; :%< ; C' ; = ; E ; :' ?%9' 98 %$% < %8=9' >8 ' @;<$; ' ?;' ; @; 8 ' 8>' ' ;9 ' E?8' E<9' $<@<F ;' 8>'>8 %=B' B ;< ' : ;9%B=9 ' <=:' 8>' 9#@8 %=B' ?;<AC' :%9<@@8%= ;= 9 ' $8=9; = ; :' 8' <' ;< C ' 8 ' < ?; ' 8' <' 9G9@;=9%8=' 8>' < 9I' %=' ?;' >G ' <99G <=$;' ?< ' F;>8 ;' ?;' $ G :

$' &#1#4*6-' ,%' %"'' + ," ' 3 #' ' 4 ' ' 0%+' C%+-%8*1' 1#+,61(%,' 9*-' 6+8+#$+' 26%-(' *+(# (0% &-%+ '# #'' &(0 2% '(0% &3 -'1" -0%,' 4 '' (0%*&' $+' 11#&,)#&* +' 0 ,' (*+2%,' 0*-' :% #$' "#18-' $*(0' '9" 18'1#"#6&

4#=*-F6% 4#(*(6-
3 3%+-*-' &#96&"6> ') 3 ' 4%&,),*('#& +%
\ 6# ! "6*(,6 3 ' 4 64%&' %& (' ñ '
+%2:& ')#&* +' <<G' T
% '(%&$ &,-' 44"*%-' (# C%+-5*1 ' 6+)6-(":' ' 0' 5%6",' -%%3 ' (0% !*1%-' #'' 0*-' -69)%1(-

%' 96&+('(0%' !*"" 2%-' +,'4#*-#+%,' (0%' -4&*+2-' e &*--6 ' 4 ' . R ' 769#-' * (&*(*F6%' (# 3 '*' 4 ' . @-R' #9-%&!%-'(0 (' (0%' +' 5[*+%-' $0*10' (0% ##&-' 96&*%,' NV'(0%' % &(0' 3*20('%-1 4% 0*-' ,%-(&61(*!% -% &10' $#'##&'(0&%% O6+,&%,'4*(-' &%-#(Q% ñ3%-' ,62' *+' (0% - 3% 4" 1% ' +,' % 10' 4*(' 1#+(*+-' (' "% -(' . G 96-0%"-' #'' 1#*0 &0 $I-' & !%"-' 4 ' < ' V ' ñ

S' , (*6-' $0#' $ -' - '% *+' C ""*1* ' '&# 3 ' (0% 4#$%&' #'' *1* 3 %&' 9#", ":' +,' 0#+%-(":' ,%1" &%-' +, "* ' 4%&' 4&#,*(#'%-' , 3 #+*(*' J +B 0%',*--%3 9"%-' 0#$%!%&' (0% + 3 %#'' (0% (& *(#&

;9 8 ;' %' <AC' ?;' 9?8G :' F;' 9G@@ %; :' E% ?' @ 8A8$< %8=9' 8' IG9 %>C' <9;$8=:' E< ' <I8 %<=' ; G =;:' 8' < C' 8'@ 89;$G ;' ?%9' <F8G 9'>C ' ?;'@GF %$' ?<@@%=;99' ⁄ <=:' <9' ?;' E<9' $8=9$%8G9' 8>' ?%9' 8E@' %= ;B % C' ?;' %B?' 8=B' ; <%=' %B=8 <=' 8>' ?;' :< H' $8=9@% <$C' E?%$?' ? ;< ;=;:'?%9' ? 8=;' <=:'?%9' %>;' ?;' ;$;= ' %9>8 G=;'8>' < ?<B;=<' 9G %;:' ?;'B 8 C' E?%$?' ?<:' :<LL ;:' ?;';C;9' 8>' ?;' G % G:;' ⁄ < 89 ';A; C' :;9$ %@ %8=' 8>' $%A%' <=:' % % < C' 8>>%$; 9' E; ;' ;M<9@; < ;:' <B<%=9 ' ?;' ;>8 ; ' 9%=$;' ?;C' < ' :; %A;:' 98 ;' <:A<= <B;' 8 ' ?;' <FG9;9' E?%$?' ?;' ;=:;<A8G ;:' 8' 9G@@ ;99⁄ <=:' ?;'@< %$%<=' %$% ; ' % @; ;:' ?;' %=$8=9 <= ' @<99%8=9' 8>' ?;' < F< %<=9' <B<%=9 ' <' @ %=$;'E?8 ' ?;' ;9 ;; %;:' <=:' ?< ;:' 333-' A% G;9' 8>' <I8 %<=' $8G :' =8 ' @ 8 ;$ '?% ' > 8 ' ?;'% @; G8G9' 9;:% %8=' E?%$?' F 8H;' 8G ' =' ?;' $< @' =;< ' 8 8=<' < ' ?;' >88 '8>' ?;' @9 ' ;' E<9' $8 @; ;:' 8' <F:%$< ;' ?;' @; %<' @G @ ;' ⁄ >%A;' :<C9' <> ; ' ?%9' <F:%$< %8=' % ' E<9' ;@8 ;:' ?< ' ?;' ;%;:' 8>' <' :C9;= ; C' <=:' ?;' ?G F ;' 8 F' E?%$?' $8A; ;:' ?%9' ; <%=9' E<9' $8=9;$ < ;:' FC' ?;' ;9@;$ '<=:' B < % G:;' 8>'9G$$;;:%=B' B;=; < %8=9 #1' ? ' @ %A< ;' $?< <$; ' 8>' <I8 %<=' %=9@% ;:' 8A;' <=:' ;9@;$ ' < %$%8G9' $< G =C' <=:' 9< % ;' ;M$% ;:' ?%9' %=:%B=< %8=' 8 ' %>' ?;' ?% 9; >' E; ;' ?;' 8FI;$ ' ?%9' $8= ; @ ⁄ FG ' ?;' @ 8 ;$ #' ?;'> ;;:8 ' 8>' E% ' <=:' %=' ?;' ?8G 9' E?%$?' ?;' ; @; 8 ' B<A;' 8' ?;' >8 % ?G1' 98$%; C' 8>' ?%9' > %;=:9';?;' 8G :' %=:G B;' 9' <9 ;' >8 ' @ ;<9<= C ' E% ?8G ' :;B <:%=B' ?;' <I;9 C' ⁄ ?%9' <=H1T

;%B=9% :;' ;'9E;$' ⁄ ' E<9'=8 ' @; ?<@9' E% ?8G ' 98 ;' ;B ; ' ?< %$% ; ' 9<$ %N >%$;:' ?%9' > %;=:' 8' ?;'%= ; ;9 '8>'?%9' < F% %8=⁄ FG ' ?;' ;98 A;:' %=' <' 9;$8=:' $ %8%;; ' 8' <A8%:' ?;' % @ G:;=' @ ;>; ;=$;' 8>' 9G@;%:8 ' A% G;' <=:' ; % ' ?%9' $8 <=:' ?;' 8 E;JG%8G9' 9 %< ;' 8>' 8 ;' F;9 8E;:' F ;' @; %<' % ;' 8=' %F%G9' ;A; G9' E?8' <9$;=:;:' ?;' ? 8=;' 8>' ?;' ;9 ' E% ?8G ' =; B%=B' > 8

0V&!1#4' M@% %*"' +M* "' " *"' 1' ' 4' . ' 9%'(%-(*3#+:' #" , (*6-' *-' ' *&' 4,' *3 4 &(* "J P)#&* *3 3' ,%' C5"**-' #3 + '&%,%6+(%+(' %(' #3 +#' *3 4%&*#' !%" ((#3*+#' &%-' +%1%-- &* -' #&,*+ +(%3' *, *3%&' "*!#&%' 4$%*(6Z' %(' 1#+-*"*#' !*(- ' '& ! ,%' *+(&"*1*(19 3*3 !%+((6+H' #3 %' &% , ' ! ! ' + , ' ' 3' !"*&(! = *]# (#' %'' 1% %*(0%&' #''(0%' $#&, S' -' (0%:' %>4&%-' -'(0%' ,*''%&%+(' 1## 3 4"*#%-' $0# 6 + *(5'*+' (0% 5 + -4*& 1:' #'')#&* + ' _ $', (%' #''0* ' ,5= -*(*4+' + ,' ,% (0' -%%' A -(#' *+ , #9' &&*#&%- 0*+' 0&0+' *+#& '*' 4' <G/' 4' 44%+ ,*>' *)

%%'(0%' 4*2& 3-' ++#, *+-' #' '*+(%&' *(3#+, ' 4%& '(# 3 ' *' 4' GG<' ('*-' '" (' + ,' #9-16&%'?96(' ++#, 0*-' $ -' 3 ,%'0*5 4' #'' !* ' ' :% &-' '(%&' (0%, % (0'#'')#&* + ' + ,' 0*-' 4& *-%' ,%*'%&!%-' 1&%, *(' + ,' &%2 &, ' _ ' 4' D/ '5 ' #2%"b

*, #+*6-' 2*!%-' ' (%, *#6-' 11#6+('^3' ' '%4*-(' >*' 4' D< < ⁄ #'' ' 644%&' (' &"%-' (# $0*10' 0%' $ -'*+!*(%,' 9:')#&* + ' '-9#&(' (*3%' 9%'#&%' 0*-' , % (0' %' 0 ,' +#' *+(%+(*#+' "4& *-*+2' ,%1% -%, '%34%&#&' 96(' 1 -6 '" , -*-*+(%&%-(%, '&%3 &8' *0b' I 69&*-*(' 626-(6-⁄ 6(' %& (' 61(#&*((%' -%& (' 1+3 -%' 9#3 36+*#+*' !"%, *--%(')#1*' 4"% + - f' 6($%*20-'(0%' -*>' 06+, &%, '"*+%-' #''0*-' %+ '' 4 +%2:&*1

?;' 8F9$G % C' 8>'<' @ %A< ;' $8= : % %8= ' %9 8 C' ?<9' 9$< $; C' : ;%B=; : ' 8' =8 %$;' ?%9' F% ?' ?%9' ; ;A< %8=' ?%9' $?< <$; ' 8 ' ?%9' : ;< ?' <' ;A; G9' ;M@% ; : ' <9' 988=' <9' ?%9' %>;' F;$< ;' %=$8=A;=%;= ' 8' ?%9' @< 8=' <=:' % ' E8G :' F;' G9; ;99' 8' :%9$ % %=< ;' ?%9' =8 %=<' ;%B=' %=' ?;' A<$<= ' %= ; A< ' 8>' 9%M' C;< 9' F; E ;;=' ?;' : ;< ?' 8>' <I8 %<=' <=:' ?;' ; ;A< %8=' 8>' = ?; %G9' G %=B' ?< ' @; %8: ' ?;' B8A; = ;= ' <9' %=' ?;' ?<=:9' 8>' %$% ; ' < 8=;D' <=:' < ?8GB?' ?;' 8: ;9 ' < F< %<=' :%9$ <% ;:' ?;' =< ;' 8>' H%=B ' ?;' <$$G G < ;:' ;<9G ;9' >8 ;:' <' 9;@< < ;' < C' E% ?' ?;' 9< ;' %=: ;@;=: ;= ' @ %A< ;' < %<=$;9' <=:' G ;:' < C' E% ?' ?%$?' <9' <> ; E< :9' ;M; $%9;:' FC' : 8<$; ' <=:' ?;8:8 %; ' G ' ?%9' :8 %=%8=9' E ; ;' F8G=:;:' FC' ?;' @9' D' <=:' E8' 8 <=' B;=; < 9' < $; %=G9' <=:' TB%: %G9 ' <%= <%=;:' ?;%' < ;B%<=$;' 8' ?;' ;@GF %$' FC' ;I;$ %=B' E% ?' :%9:<%=' ?;' @?<= 8 ' E?%$?' ?;' 9 C ;:' <=' ;=%@; 8 ' < $; %@G9' 9 % ' <:?; ;:' 8' ?;' 8 :' ; %B%8=D' <=:' ?;' :;A8G ' <B<=9' E?8' 9;$; C' :%98F;C;:' ?;' <E9' 8>' ?;' $?G $?' <=:' 9 < ;' <@@ <G:;:' ?%9' @ 8>8G=:' 9H% ' %=' ?;' $%;=$;' 8>':%A%=< %8=' G ' ?;' @899;99;:' ?;' 8 ;' A< G<F ;' +G< %>%$< %8=9' 8>' ;< =%=B ' A% G;' <=:' $8G <B;D' ?;' 9 G:C' 8>' ?;' %=' % ; < G ;' ?<:' % @ 8A;:' ?%9' <9 ;' I' <=:' ?%9' % % < C' < % 9' ?<:' ;$8 ;=:;:' ?% ' 8' ?;' ;9 ;; ' <=:' $8=>%:;=$;' 8>' ?;' B ;<' ; %G9' %=' E?89;' G%=' ?;' <9' %=A8 A;: ' C' <' % ; C' >%B? ' < $; %=G9' ;9$<@;:' ?;' <B;' 8>' < ;= %=%<=' <=:' F8 : C' <99; ;:' ?%9' %F; C' < %:9' ?;' $8=AG 9%8=9' 8>' ?;' ;9 ; =' ; @% ;' %9' A8 G= < C' D8 ' ; G$ <= ' 9GF %99%8=' 8' ?;' <G ?8 % C' 8>' <I8 %<=' E<9' ;E< :;:' FC' ?;' B8A; = ;= ' 8>' %$% C' <=:' ?;' $8 <=:' 8>' <=' < C' 9 < %8=;:' %=' ?< '%9 <=:' 8' 8@@89;' 8 ' 8' < <$H' ?;' <=:<9D' FG ' ?%9' < F< %<=' ; $;=< %;9' <> ; ' ?;' ; @; 8 9' ;:<?' ,A ;' ; @ ;:' 8' ;A8 ' C' ?;0< N >G ' %F; < % C' 8>' %$% ; ' ', ?;' ?;<:' 8>' <' F<=:' 8>';% ?>G ' >8 8E; 9' ?;' %= ;@%:' < $; %=G9' 8$$G@%;:' ?;' @ 8A%=$;' 8>' < < %<' <99G ;:' ?;' % ;' 8>' < %$%<=' 8>' ?;' ;9 ' 9;$G ;:' ' ?;' 8A;' 8>' ?%9' 9GFI;$ 9' FC' <' % :' <=:' ;JG% <F ;' ;%# ' % ' <' >;;' E?%$?K $ <% ;:' ?;' :8 %=%8=' 8>' ?;' <: %<%$' <=:' < ;0

*,#+*6-'^ +%2' +(9' < @R',*-3*--%-'0*3' (9'0% !%+
6>%& (' 626-(6-' + (6& %'"%2% %!%&6-'
7* #&63'+63%&63' ' Q
+,' +'#",'"*-(#"(0%'%34%&#&-'1#34#-%,' 9#6(' (0%'(*3%#" 6-(*+* +'4& *-%-' 0*-'
4*%(:' +,' '*>%-' 0*-'&%-*,%+1%' (' #3%^ *&3#+,' 4(' ,' *,#+'4' '*+ ' ** R' _ %'
$ -' ' + (*!%#" 6 +* b

S *""%3#+-(' &0# *-' "$:-'-1 +, "*[%,'9:' (0%' !*&(6%-' " +'*,%"-' ((&*96(%-'(0*-'
,! +(2%#6-'4#&(& *('#" &1%""*+6-' ^$0*10'#6*, -' 0 -' 4&%-%&!%,R (#' (0%' 4 &(* "
[% "#"-#3%' 2 +' 0*-(#&* +'^ *-(' ,%-' 34%&%6&-'(#3 5' 4' <<M5

9@ %=B 8> ;<$? C;< ? ;C ;JG%@@;:) >8 %:<F ;= <AC %= ?;
@8 8> < ?<B;D <=:6;=9; %$?% 9; >? ?8GB?= %= < A;%C
<:A<=$;:<B; 9 % $8 <=:;:%=@; 98= ?;9 % @8 <=
;M@;:% %8=9 %9 :;9%B=9 E; ;$8=$;<;: E% ?% @;=; <F ;
9;$;$C % ?;8 ;= ?<?;?8%9 ;: 9<% ?;= ?;E<9
<9H;: FC ?%9 @% 8 E?< $8G 9;?;9?8G :9 ;; D 5 ;<A;?;
:; ; %=< %8= 8?;E%=:9 R ;@ %;: ?; < F< %<= E% ?@%8G9
< 8B<=$;SD ; % <=9@8 G9 8?;BG% C $8<9 E?89;
%=?<F% <= 9?<A;@ 8A8H;: ?;: %A%=;IG9 %$;D U FG %>6;=9; I$
?% 9;>:;%B=;: 8 %99G; 8 ;@ ;$%9;8 :; 9?;IG:B;: ?;
89 E;< ?C 8F;?; 89 % %=< ?;<=:<9 ;@;<;:C
%9% ;:?;$8<9 9 8> @<%= %BG %< G9$<=C < @<=%< G;<= <
G %G @G %< < 9F %< ;=; %< < < %< @% G9D 6 ;;$;
<=: %$% C D ?;C E; ; @ ;: 8 9GF:G8 ?;%9 <=:8> < :%=%<
98 <:A<= <B;8G9 C @ <$;: %= ?;$;= ;8> ?; ;:% ; <=;<=D
<=: ?;% < 9 9@ ;<:;98 < %8= 8 ; ^>>8 ?;$8 G =9 8>
; $G ;9 8 ?;8G ?8>?; % ;D 9 ?;C E; 8 ;</#
F% %8G9 8>9@8% ?<=8>B 8 C ?;C 9;:8 <$H;: <=C >8 %>%;:
$% %;9 8 ;=B<B;: <=C ;BG < 88@9 %= ?;8@;=>%; : G ?;
$; ; % C 8> ?;% 8 %8=9 ;=<F ;: ?; <89 <? ;9< ;% ;
8 ? ;< ;= <=: 8 < <$H ?; 89 :%9 <= 8FI;$ 9 E?%$?
< <$;: ;%;:9% ;9 D <=: <9 ?;C < E<C9 ; F< H;: <9G>%$%;=
=G F; 8>?8 9;9?;C ?<: =8 988=; <=:;: ?<= ?;C 9E;@
?;: %9 <C;: $8G= C E% ?<F8:C 8> %B? $<A< C ; =8 N
E% ?9 <=:%=B ?;;M< @ ;8> ?: H%=B ?;=< %A; <=:<9 <=:
<=% %=9;=9%F C:;$ %=;: ?%9 8% 98 ;<=:<@; % 8G9 E< (;D ?;
?< :C B;=; <%$<f 8> ?;>% 9 $8=JG; 8 9 E<9 < 89 ;M %=BG?%?;:
<=: ?;% 98=9 E?8 E; ;F8 =% > %$<;=I8C;: ?;<;?$%8G9
F< ?9 <=: B< :;=9 E?%$?< ?<: F;;= <$JG% ;: FC ?; A< 8G 8>
?;% >; ?; 9 ?;% @ <$; E<9 ;<:% C 9G@@ %;: FC >A< %8G9
G % G:;8> 88 9 <=: 8 <=9 8> $<@ %A;9 <=: 8G <E9D <=:
?89;:;9@; < ;E ; $?;9 E?8 ?<: < ;<:C A%8 <;: ?; <E9 8>
?;% $8G= C E; ;? ;% 89 ;<B; 8 8 @ 8 8 ;? ;< 8$%8G9 <$ 9
E?%$?: %9B <$;? ;% A%; 8 %;9 8> 6 ;=9; %$ =? ;< ;= 8>
?%9 G=?<@@C @ %98=; 9 ?;98 ; % ;9 $8=9G ;: ?%9 <A< %$; <=:
98 ; % ;9 %=:G B;: ?%9 $ G; CD <=: ?; <99<$;8> >%A;
?G=: ;: =8F ;$% %L;=9 8> `<= 8 ` <$C%% ?G E?89; <=B # :

"(('%>1*,*6 3 J 1#+!%(-#F6%'#&,*+1' A (*
#&&*, ' 61 %#-'*+'%&(3*0* !&- ' '6&##%-
_(":' $ -' "-# ((18%,' +' +#(0%&'-*,%'*+'(0%':% &' . .'0:' +' *+! -*#0' #'' (+''
&%46"-%,'9:' *1*3%&' +% &' %&2 +*#' ,' %,%3' #+(*-' ^ '40& -%' $0*10 ' -' &'
#,28*+'#9-%&!%-'-622%8-' *%,3#+(R' +#+' 3 4*+' ,' ++ b

F8:%;9' %;' $<9 ' %= 8' ?;' 8=%<=' 9;<' E<9' % @G ;:' FC' ?;' @GF %$'
]%=:%B=< %8=' 8' ?%9Q < ;9 ' @89 ; % C
G$?' $ % ;9' $8G :' =8 ' F;' ;M$G9;:' FC' <=C' @ 8A8$< %8=9' I' FG '
L '%& ' *?;' E< ' E?%;F' ?;' H%=B' 8>' ?;' <=:<9' @ 89;$G ;:' <B<%=9 ' ?;'
K' 8 <=' ; @% ;' E<9' IG9 %>%;:' FC' <' 9@;$%8G9' <=:' ;<98=<F ;' 8 %A;'
?;' %:8E' 8>' < ;= %=%<?' G:8M%<' E?8 ' ?;' ?<:' ;:' $<@ %A;'
R' 8 ' 8 ;' 8' < ?<B;' <9' ?;' 98 ;' ?;% ;99' 8>' ?;' ?;8:89%<='
?8G9;' D' ?;' ' ; : ; ' :<GB? ; ' G:8$%<' F;$< ;' ?;' ; G$ <= ' E%>;'
> G==; %$' ?%9' ; :;9 ' 98=D' <=:' ?;' 9 ; ' >< ?; ' <99; %=B' <'
;B<' $ <% ' E?%$?' $8G :' =8 ' ;<9% C' F;' ;>% ;:' 8 ' 9< %9>%;:' ' :;N
<=:;:' <' IG9 ' @ 8@8 %8=' 8>' ?;' @; %<' @< % 8=C' ='
<:;JG< ;' 8 ' <' ;<9 ' <' A< G<F ;' $8 @;=9< %8=' E<9' 8>>; ;:' FC' ?;'
Y)"# <9 ; =' ; @; 8 ' 8' @G $?<9;' <' =;$;99< C' @;<$;' G:8M%<' <=:'
?;' C8G=B;' :<GB? ; ' %<$%:%<' E ;' ?8=8G <F C' ;9 8 ;:' <=:'
?;' >G C'8>' ?;' <=:<9' E<9' $8=>%=;:' 8' ?;' % % 9 8>' ?;' ;9 ; ='
; @% ;' ?;' <%<=9' :;9 % G ;' 8>' <' =<A<' >8 $;' E?%$?' < 8=;'
E<9' <@<F C' 8>'@ 8 ;$ %=B' ?;% ' $8<9 9' % @ 8 ;:' ?;' <%:' 8>' ?;'
8 ;' >8 G=<;'=< %8=9' 8>' ?;' <9 D' E?8' ?<:' >8 ; C' <$H=8E D' K'
8:B;:' %=' @;<$;' <=:' E< ' ?;' 9G@ ; <$C' 8>' 8 ;' G' ?;' @; N
@; G<' :%A%9%8=' %.' ?;' E8' ; @% ;9' ?' 8>' <' ;=<=<;:' ?;%' %= ; ;9 '
<=:' ?;%' %=$ %=< %8=9D ?;' >;% ?' 8>' <' ;$;= ' ;< C' E<9' < ;B;:' D'
<=:' ?;' ;9 ; =' 8%=<=9' %=9 ;<:' 8>' < 9' <=:' 9?%@9' $8G :' 8= C'
8F <' ?;X:%9 <=$;' 8>' <' $8 :' <=:' %=;>>;$ G<' ;:%<%8=' ?;'
?<%#? C' %;% ;' A ?8' %<:' 8=B' 9 GBB ;:' E% ?' ?;' :%>%$G %;9' 8>'
?%9' 9% G< %8=' E<9' <' ;# ?' ;:G$;:' 8' <:: ;99' ?;' % 8=;' 8>'
8=#<= %=8@ ;' %=' ?;' ?G F ;' <=BG<B;' 8>' <' 9GFI;$ D' <=:' < C'
9GF % ;:' <9' ?;' @) $;' %:' 9;$G % C' 8>' ?;' < %<=$;' 8' <$$;@ ' <'
<9 ;' > 8 ' ?;' $?8%$;' 8>' ?;' ; @; 8 ' %.' ?;' <9 T' ' %9' =8 '
?;' @G @89;' 8>' ?;' @ ;9;=' $?<@ ;' Y8 ' ;A;=' 8>' ?;' @ ;9;=' '
A8 G ;a#' 8' $8= %=G;' ?;' :%9 %=;' 9; %;9' 8>' ?;' CL<= %=;'
?%9 8 C D' FG ' <' $8=$%9;' A%;E' 8>' ?;' ;%B=' <=:' $?< <$;' 8>' ?;'
@; 8 ' ;8' <C' ;M@ <%=' ?;' <9 ' ;>>8 9' ?< ' E ;' ;' < ; @ ;:'
8' 9<A;' ?;' >< %=B' ; @% ;' 8>' ?;' ;9 ##

h' 0%'4#%(0*$-%"'N'1#34%"%,'(#' 18+#$"%,2%'(0%',*-(&%-'#"' *%*3%&' 4*' </D D' U
H' 0 %(%&% '*(*!*1(6-' *%*3%&' F6%&+' 4 9**1 ' ' (
%-)&*#*66(' '-#"F '!*>' $ '&%4%"=(
*& (3'4 ' ' ! 5 6 + 5 W 0
(":' , ,&%--%-' 9 &'1#34" *+(' (#' (0%' *9 ' +,' #3%' (' (0%' -#"*1*((*#+' #"'(0%'
&*!%& 2#,' (& +-4#&(-' 0%&-%"'' (#' #+-(+(*+#4"%' &%+#6+1%-#' 0%&' +1*%+(' 1" *3-'
+,'*34"#&%-' (0%' '&*%+,- 4' #"' ##&4& ' (0%' 2#, ,%-' #"' (0%' -(' 0*-'' 96"#6-'
3 5 5 %&: ' 0*10' (0%'2%+*6-'#' (6,* +'(%(,'6-%,' +,' 96-%,'*-'(0%##+-(6(' +,'
3*-%& 9"%&%-#6(1%'6('X0%' 36-%' #'' ",#+*6-
&#'):# ' <#'' (0%' F6 &(#%,' %0,%,' $*(0' (0%'A ""' #"'(0%' %-(%&+' 3 4*&%U 9%"#$

'9%' #&(2*#&" 6(0#='#"'(0%'& 2+ '#"' &1*(3' %#' +,'Y%+#' &%' &%,61%,'(#'
-#3%' 34 &%1(' '& 3+% $' 0#-%' ,%'*1%+1*%-' 36-(' 9%' -644"'%,' '&#3' (0%' 3#&%'
&%1 +(' 1$+4*" (*#+-'#"' 0%#40 +%-'Y#+ & -B 6)' %,&%46-

%=$;' ?;' :;< ?' 8>' ?;' C8G=B;' ?;8:89%G9' ?;' :8 ;9 %$' #$.,.V//]'
;@89;' 8>' 8=9 <= %=8@ ;' ?<:' =;A;' F;;='%= ; G@ ;:' FC' E1'
8'><$ %8='G $?; %<' ?<:' F;9 8E;:'?;'?<=:'<=:' ?;'9$;@ ;'
8>' ?;' <9' 8=' ?;' 8:;9' A% G;' 8>' ; $%<=D F;' B < ; C'
;A; ;=$;:'?;'<GBG9' <=H'<=:' A% B%=' $?<9 % CD' <=:D <> ; ' ?T'
:;< ?'?;'B<A;'?%G@;8@ ;' ?;' ;M< @ ;'8>' ?;' ;%B%8G9' E8 9?%@'
?<'E<G':G;'8' ?;' ; 8 C'8>' ?;' @; %<' <%=0 ;=%A;'
8' ?;'@ 89@; % C'8>'?%G' E=' :8 %=%8=9' < $%<=' 9; ; ;:' 8'
F;?8 :' E% ?' %=:%>>; ;=$;' ?;' %9>8 G=;9'8>' 8 ;'I' <=:' ?;'
8F9 %=< ;' ;>G9<'8>'<'F <A;'<=:' <$ %A;'@ %=$;' 8':<E' ?%G'9E :'
<B<%=9' ?;' <=:<G' E<G' <9$ %F;:' 8' <' 9;$;'@ 8 %9#' E?%$?'
?<:' >8 ; C'F;;=';M<$;:' > 8 '?% ' E?;=';E<G'<'$<@ %A;'%='
] ?;'@8E;'8>'6;=9; %$ĸ#T ?;' :;< ?'8>' ; $%<=' <> ; '<' ;% ' <=' f
8>'9;A;='C;< 9'E8G :'?<A;':;M@89;:' ?;' <9' 8' ?;':<=B;'8^'<
@8@G <';;$ %8=' %>' ?;'9G@; %8'E;%B?' 8>'<'9%=B ;' >%% C'?<:'
'=8'F;;='<F ;' 8' %=$ %=:' ?;'F< <=$;' %=' ><A8G'8' ?;'$<=:%:<;'
E?89;'%= ;;9' ?;C'9G@@8 ;:' ?;'@< %$%<=' 9@<' %B?'?<A;'
@ <$;:' ?;':%<:; '8='?%G'8E='?;<:'%>'?;'E8G :'?<A;'9GF9$ %F;:'
?;' %$;=;' $;;:' G %=B' ? ;;' B;=; <%8=#' ?;' < %;G'8>'
?;' <9' E; ;' 9G$$;99%A; C' $8 <=:;:' FC'?% '> ?; 'FC'?% D' '
9; >'<=:' FC'?%G' 98=' :<FG %GG'D' ?%G' <F< %<=' BG< :G'>8 ;:'
<' %% < C'>8 $;' ?<'8A; <E;:' ?;' @< <$;' <=:' ?;';<@% < D' <=:'
?;' %F; <':%9 %FG %8='8>'?%G' %;=9;';<9G ;G' ;=:;:' @<'
<G'@8@G <'<G' ?;' E<G'@8E; G ';' ;$8 ;=:;:' ?;'8F9$G ;'
=< ;'8>' ;8'8>' ? <$;'<' :%<#C' %FG=;'<=:' ?;' @0%=$%@<'D
9 ;E<:'8>'?%G' ?8G9;?8:' %G' =8 %=< %8=' E<G' G=<=% 8G9C'
<%»%;:' FC' ?;' 9;=<;'D' <=:' ?;'9; A<=' 8>' 9@<' ;$;%A;:' ?;'
@; %<'$ 8E='>8 ' ?;'?<=:G' 8>' ?;'@< %<$?' 'F%9?8@'E?8'
<G' @; % ;:' 8' ;M@ ;99' FC' ?%G' G=G9G<'$; ; 8=C' ?;'
9G» <B;'8>' ?;' ;% C ?%9'; @;>8 ' ?;'»% 9'8>' ?;'=< ;'8>'
;8' ?<G' F;;=' :%9 %=BG%9?;:' FC' ?;' % ;'8>' ?;' * ' >8 '
<'9G$$;99%8='8>'@ %=$;9' E?8'B <:G< C'>%M;:'%=' ?;'8@%=%V '=>

T5 (' 6"10%&* ',*%,' 7'./<''#6&':% &-'9%'#&%'0%&'+#3*+ ")6-9 +,' +,'0#&'
'%-(*! "*-'1%"%9& (%,'#+'(0% "#(0' #"E4(%39%&'9:'(0% 3#,%&+' C&%%8-J 0% 9%K
F6% (0%,' +'*3 3%+-%' 4 (&*3#+:'(#'4*#6-' #&' ('% -(' (#'%11"%-* -(*1 "'6-%-' %%'
'%3#+('3#*&%-' 11",-'(#3'>!'4'* M_* .' T

T5 %%' &#1#4*6-',%H %""' +, "'3'*'#'.'4' /

A&#3'(0*-',*- 9*"*(:'#"-4 &'(#' -1%&&,'(0%'(0&#+%'*(3 :'9%'*+'%&&%,'(0 ((0%'
-(*+'#" '$ -'4%&4%(6 " +,'*+,%"9"%'$0*"%'(0 ('#" ',*- 44% &%,'(#'
(0% -%1#+,'2%+%& (*#+' _ -4 &'-#+'#'' &, 96&'6-'$ - #'' "+*1'& 1%' %'$ -'
1#+-6"*+' 7'.<.b

H' 0%#40 +%-'4' /' 0*-' 44% &-'(#' 9%' (0%'*&-('#&*2*+'#"'1%&%3#+:'$0*10'
""'(0% 0&*-(*+'4&*+1%-'#"'(0%'$#&",'0 !%'-*+1% ,#4(%,'('(3,''&#3'$0*10'(0%'1"%&2:'
0 !%',%,61%,'(0% 3#-('#&3*, 9"%1#+-%F6%+1%-

?;' 6 ;;H9' <' A; C' ?G F;' 9 <=:<:' 8>' ?; 8%$' 8 ' < ' ;<9 ' 8>'
I 8C<' @; >;$ %8=' ; ' ?;' ; @; < ;' >% =;99' E% ?' E ?%$?' ;8'
;9%9 ;:' ?;' 8@@ ;99%8=' 8>' ?%9' F;=;><$ 8 '9?;E;:' ?<' ?;' E<9' $8=N
9$%8G9' 8>' ?%9' :G C' <=:' 8>' ?%^' @ ; 8B< %A;' 9@<' E<9' <9 8=%9?;:'
8'?=:' ?<' ?%9' %=> G;=$;' $8G :' =8' 8=B;' <@@8%=' <' @ <;>;$' 8>'
%# <= %=8@ ;!' ?;' @ ;9G ;:' 8' ;@ 8<$?' ?%9' 98A; ;%B=' E% ?'
<' F ;<$?' 8>' @ 8 %9;' <=:' %=98 ;= C' 9?<H%=B' ?%9' @G @ ;' 5' '%9'
=8' @ 8@;' R9<%:' ?;' ?<' ?;' <=' E?8' %9' %=A;9 ;:' E% ?' ?%9
;=' 9?8G :' F;' BG% C' 8>' C%=B' U' 5' 8 '%9' % ' @ 8@;' R ;@ %;:
8' ?<' <' @ %=$;' 9?8G :' F;' $8 @; ;:' 8' ;9%B=' ?%9' 8E='
_<:#=;=' <=:' ?;' @GF %$' %= ; ;9 ' 8' ?;' E% ' 8>' <' 9GFI;$ K
> ; ' ?%9' ;M <8 :%=< C' 9$;=;' % ' E<9' % @899%F ;' ?<' ?;' ;N
$8=$% %< %8=' 8>' ?;' ; @; 8 '<=:' ?;' @< %$%<=' $8G :' F;' 9%=$; ;' D
8 '<' ;<9 ' ?<' %' $8G :' F;' 98 %:' <=:' @; <=;=' =' < C' 8>'
<G %<=9K# E<9' 9;$; C' ;A%;:' <=:' %= 8:G$;:' %= 8' 8=9 <= %N
=8@ ;' D <=:' E ?% ;' ;8' G=:; %=;:' ?;' <G ?8 % C' <=:' @ ;@< ;:'
?;' :%9B <$;' 8>' ?;' >< % C' 8>' 9@<' ?%9' % :' <=:' $<G %8G9'
F;?<A%8G ' ;9 <%=;:' ?; ' > 8 ' <=C' <9?' <=:' :;9@; < ;' < N
; @ 9' E?%$?' %B? ' ?<A;' F;;=' >< <' 8' ?; 9; A;9' 8 ' ?;%'
;<; %;9' ?;' ;<9G ;9' 8>' @;<$;' <=:' E<' E; ;' <>>;$;:'
FC' ?%9' ; =<' ;A8 G %8=' 9' 8=B' <9' 9@<' :;B <:;:' ?;'
<I;9 C' 8>' ?;' ? 8=;' ?;' 9;$;' $8 ;9@8=:;=$;' 8>' ;%B%8='
D%= ; ;9 ' ;=B<B;:' ?% 8' ><A8G ' ?;' $<G9;' 8>' 6;=9; %$'
?;=' ;8' ?<:' :; %A; ;:' ?% 9; >' 8 ' ?<' %B=8 %=%8G9' 9; A%N
G:;' ?:' %9 ;=;:' 8' ?;' $8 @ <%= 9' 8>' ?;' < %<=9D ;98 A;:'
@' ;M %%0@<;' ?;' C <==C' 8>' ?;' <=:<9D <=:' :;$ <;:' ?%9'
< %<=$;' E% ?' ?%9' $8 ;<BG;' = ?; %G9' E?8 ' ?;' 98; = C' %=D
C;9 ;:' E% ?' ?;' :%<:; ' <=:'@G @ ;' 8>' ?;' ;9
?;' A% G;9' 8>' = ?; %=9'?<A;' @; ?<@9' ?;;=' <B=%>%;:' 9%=$;'
?;' @; %<' ;9$;=' E ?%$?' F;' $8G :' 8= C' ;;:G$;' > 8 ' ?;'
G9G @;' 8$8@%G9D ?<9' F;;=' 9E; ;:' %= 8' <' %=;' 8>' ; @; 8 9#1'
G' ?;' ; %' 8>' %%9' % ;:%<;' @< ;= 9' ?;%' ?8=8G 9' <=:'
?;%' %$?;9' ;=:; ;:' = ?; %G9' 8=;']8>' ?;' 89' % G9 %8G9

? H 5 %,&%+6-'^4' g)L'<. '_0)' '4'5 '&)!3%,' #+'*' 4' G@ ' $0# $ -' 7'
3 (' $ O (0%' $&*(%&-' #'' 9%((%&' , :-' 4&%-%&!%,' (0%' &%3 &8 9"%' $#&,-' #''
54 &' $ ' *& 4() #%4) % #0'#$ M H P* .6
3! 0%'4#$%&' #'' (0% - 6&* +-' 2*((%,' (0% -(%&+' %3 4*&%' *+' (0%' ($ '-611%%,*+2'
&%*2+-' #''Y%+#' +,' + -(-*6-J 96(' 0' %+,%,' *+' (0%' ,%-(&61(*#+' #'' (0#-%' &9 &* +-'
$0#' 3 *+(*+%,' (0%*&' '*%&1%' *+,%4%+,%+1%' 9#6(' ($# 06+,&%,' +,' (0*&(:' :%&-
&' ' "*' '1*!*-' 9' 6&9%
&#1#4*#' 2%+*(4&%' 3 "% -') 16(' 4&*-%' '4&#4 2#'
& ! '!%+*(
0%'4#%(^ *,#+' +%2:&' +(0%3' @ <G R (0%+' 4&#1%%,-' (#'&%" (%' (0%'4+!3%' "*'%
+,'' #&(6+%-' #'' (0%' '6(6&%%3 4%&#&' *(0' $0*10' 0%' 36-('0 !%' 9%%+' !%&:' *3 4%&'%1(":'
1 6 *+(%,

9GFI;$ 9ʻ 8›ʻ ?;ʻ <9 ʻ %9ʻ ᵖ›< ?; ʻ 8$8@%G9ʻ 8F <%=;:ʻ<> ; ʻ ?%9ʻ ; 9%<=ʻ ; F<99Cʻ ?;ʻ <=Hʻ 8›ʻ B;=; <ʻ <=:ʻ @< %$%<=Dʻ <=:ʻ ?;ʻ =< ;ʻ 8›ʻ = ?; %G9ʻ E<9ʻ:; %A;:ʻ> 8 ʻ?%9ʻ < ; =<ʻ B <=:(?; ʻ ?;ʻ$; ;F < ;:ʻ@ <;>;$ ʻE?8ʻ@ 8 ;$;:ʻ E% ?ʻ98ʻ G$?ʻ<F% % Cʻ <=:ʻ ,9G$$;99ʻ ?;ʻ %=><= ʻ ;%B=ʻ 8›ʻ ?;8:89%.1bʻ ?;ʻ B <=:98=ʻ 8›ʻ ?;ʻ @ <;>;$ʻ E<9ʻ <%9;:ʻ <F8A;ʻ ?;ʻ $8=:% %8=ʻ 8›ʻ <ʻ @ %Aᵖ ;ʻ 9GFI;$ ʻ FCʻ ?%9ʻ < %<B;ʻ E% ?ʻ G@?; %<ʻ ?;ʻ :<GB? ;ʻ 8›ʻ ?;ʻ ; @; 8ʻ ; $%<=ʻ ?%9ʻ 9@ ;=:%:ʻ< %<=$;ʻ E?%$?ʻ %B?ʻ G@; 9;:;ʻ ?;ʻ =;$;99% Cʻ 8›ʻ ; % ʻ?<9 ;=;:ʻ ?;ʻ@ 8 8 %8=ʻ 8›ʻ = ?; %G9ʻ 8ʻ ?;ʻ 9G$$;99%A;ʻ:%B=% %;9ʻ 8›ʻ $8G= ʻ 8›ʻ <9 ; 0B;=;=:Sʻ 8›ʻ;8=9%:ʻ<=:ʻ 8›ʻ@< %$%<=Dʻ <=:ʻ?%9ʻ ; %ʻ 8ʻ >8 G=;ʻ$<% ;:ʻ ?;ʻ%c 8G 9ʻ 08›ʻ A%$ 8 Cʻ E?%$?ʻ E<9ʻ 8F <%=;:ʻ 8=ʻ ?;ʻ F<=H9ʻ8›ʻ ?;ʻ <=GF;ʻ 8A;ʻ ?;ʻ G=9ʻ % ?8G ʻ %=:G B%=Bʻ <=ʻ ;9› <A<B<=ʻ< F% %8=ʻ ?;ʻ 98=0%=0 <Eʻ 8›ʻ < $%<=ʻ %B?ʻ ?8@;ʻ 8ʻ F;ʻ ?%9ʻ 9G$$;998 Dʻ FG 0ʻ = ?; %G9ʻ 9G@@8 ;:ʻ ?;ʻ :%9<@@8%= ;=ʻ E% ?ʻ 0$8G <B;ʻ <=:ʻ @< %;=$;Dʻ <=:ʻ ?%9ʻ 9GF9;JG;=ʻ ; ;A< %8=ʻ E<9ʻ G=%A; 9< Cʻ <@N @ 8A;:ʻ FCʻ ?;ʻ @GF %$ʻ E?8ʻ ;9 ;; ;:ʻ ?% ʻ E8 ?Cʻ 8ʻ ;%B=ʻ % ʻ ?;ʻ <9$;=:;:ʻ ?;ʻ ? 8=;WTʻ ?;ʻ; @; 8ʻ8›ʻ ?;ʻ ;9ʻ < $?;:ʻ > 8 ʻ 8=9 <= %=8@ ;ʻ< ;=:;:ʻ FCʻ 9;A; <ʻ $8G= 9ʻ8›ʻ ?%B?ʻ :%9N %=$ %8=ʻ <=:ʻ <ʻ F8:Cʻ 8›ʻ BG< :9ʻ< 89ʻ ;JG<ʻ 8ʻ ?;ʻ 9 ;=B ?ʻ <=:ʻ =G F; 9ʻ8›ʻ<ʻ ;BG<ʻ<ʻ Cᵖ ?;ʻ ;= ; ;:ʻ 8 ;ʻ %=ʻ 8 %E=@?ʻ <=:ʻ ?;ʻ $?8%$;ʻ 8›ʻ ;8ʻ E<9ʻ $8# $:ʻ?Cʻ ?;ʻ9;=< ;ʻ ?;ʻ@;8@ ;ʻ <=:ʻ ?;ʻ < F< %<=ʻ $8=›;:; < ;9ʻ8›ʻ < C 11ʻ ?;ʻ98 ; =ʻ%=<GBGN < %8=ʻ8›ʻ = ?; %G9ʻ E<9ʻ›8 8E;:ʻ FCʻ ?;ʻ=G@ %< 9ʻ8›ʻ?% ʻ:<GB? ;ʻ <=:ʻ ?;ʻ@< %$%<=ʻ %$% ;ʻ9 <ʻ›8 G=< ;ʻ ;A;=ʻ E?%$?ʻ E<9ʻ 8=N 9%:; ;:ʻ <9ʻ ?;ʻ %%==;9ʻ 9;$G % Cʻ 8›ʻ ?;ʻ G=%8=ʻ <=:ʻ ?<@@%=;99ʻ 8›ʻ ?;ʻ 9 <;ʻ ?;ʻ E;< ?ʻ 8›Dʻ E8ʻ ; @% ;9ʻ E<9ʻ 89 ;= / %8 9%Cʻ :%9N @ <C;:ʻ Dʻ <=:ʻ <=Cʻ 9;=< 8 9ʻ$8 @ ; ;:ʻ ?;›ʻ G%=ʻ F Iʻ<=ʻ;M@;=9%A;ʻ ;› =ʻ 8ʻ:%9BG%9;ʻ ?;% ʻ@8A; Cʻ ʻ9; %8G9ʻ FG9%=;99ʻ <9ʻ G9N @;=:;:ʻ:G %=Bʻ ?%9ʻ›;9 %A<ʻIʻ ?;ʻ$8G 9ʻ8›IG9 %$;ʻE; ;ʻ9?G Dʻ ?;ʻ 9 ;; 9ʻ8›ʻ 8 ;ʻ ?;ʻ ?;< ;9ʻ ?;ʻ@ <$;9ʻ8›ʻ@GF %$ʻ <=:ʻ@ %A< ;ʻ ;98 ʻ ;98G=:;:ʻ E% ?ʻ ?C ;=<;<ʻ 98=B9ʻ <=:ʻ :<=$;9Dʻ <=:ʻ ?;ʻ ; 8C<ʻF %:;ʻ$ 8 ?;:ʻ %=ʻ 9% H;=ʻ 8F;9ʻ E% ?ʻ<ʻ$ 8E=ʻV ʻ ?;ʻ ?;<:ʻ %C@%G E<9ʻ$8=:G$;:ʻ 8ʻ ?;ʻ@< <$;ʻ8›ʻ %$% ;ʻ E?8ʻ?<:ʻ $?<=B;:ʻ ?%9ʻ % % < Cʻ :;99ʻ›8 ʻ ?;ʻ?<F% ʻ8›ʻ<ʻ$8=9G ʻ<=:ʻ<ʻ ;=< 8 ʻ =ʻ ?%9ʻ ; 8 <F ;ʻ 8$$<9%8=ʻ %:8=%G9ʻ E?89;ʻ ;< Cʻ<%GF% ›8=ʻ F<:ʻ F;;=ʻ 98ʻ›8 < Cʻ F <9 ;:ʻ<@@;<;:ʻ<9ʻ ?;ʻ 8 < 8ʻ ʻ GA; B=;ʻ< 8=B ?;ʻ@ 8A%=$%<ʻ;@G %;9ʻ ?8ʻ<:: ;99;:ʻ?;ʻ ? 8=;ʻE% ?ʻ;8=B < G0

5ʻ *,#+*6-ʻ ,*-1#!%&-ʻ *(0ʻ (#"%& 9"%ʻ *+2%4*6(:ʻ(0 ʻ (0*-ʻ,*- 44#$ +%+(ʻ , ,%,ʻ +%$"6-(&% (#ʻ (0%ʻ!*&(6%-ʻ #"ʻ 0(0%3*6-ʻ^-(#ʻE1Rʻ$0#ʻ,%1"*+%,ʻ #+% -1%4(&%ʻ +,ʻ &%"61(+("ʻ:ʻ 11%4(%,ʻ +#(0%&ʻ^DOʻE1Rʻ ʻ ?

Pʻ 0%ʻ4#%(ʻ 2 *+ʻ1%"%9& (%-ʻ(0%ʻ6+ +*3*(:ʻ#ʻ"ʻ "ʻ9&,1&-ʻ#"ʻ(0%ʻ-((% ^ / DRJʻ +,ʻ (0% 0&#+*1"%#"ʻ , (*6-ʻ3%+(*#+-ʻ(0%ʻ'#&1%-ʻ 0*10ʻ ((%+,%,ʻ0*-ʻ3 &10

8f<f 9;$; f@ 8I;$ f8>f ;A%A%=Bf ?;f<=$%;= f E8 9?%@f 8>f ?;f B8:9 99f
?;9;f%:8 9f E ; ;f$=% F ; :f %= 8f :G9 f<=:f ?;f C ?8 R.Cf E?%$?f
?<:f8=$;f F ; ;= f?;f$; ; :f8>f=< %8=9f E<9f 8f==%A; 9< Cf :>;F; %;A; :f
?< f% f %B? f F;f ; @ 8C; :f E% ?8G f9$<=:< f8 f< f ;<9 f E% ?8G f f
9G9@%$%8=f FCf ? %9 %<=f@8; 9 1Tf f ; f ?;f A;9 %B;9f 8>f 9G@; 9 % %8=f
E ; ;f=8 f <F98 G ; Cf 8F % ; < ; : f<=:f ?;f>;9 %A<3f 8>f ?;f G@; 0f
$< %<f E?89;f 8 %B%=f ?<:f@ ;$; : ; :f ?;f >8G=:< %8=f8>f 8 ; f E<9f
9 % f$; ;F < ; :f G=: ; f ?;f ;%B>%f 8>f = ?; %G9f f ?;f9<A<B;f<=:f
9% @ ;f % ;9f E ; ;f ;M@ ;99%A;f 8>f<=f ;< Cf9 < ;f8>f E >; Cf F;>V=^;f
?;f%=A;= %8=f8>f < 9f<=:f <B %$G G ;f ?;f G9 %$: ;% %;9f E?8f
@ ;9%: ; :f 8A; f ?;f 8% 9f<=:f@ ;<9G ;9f >f ?.f@<9 8 <f %>; f <=f
<==G9f<=:f ?;% f <%=f 8>f9< C 9f E ; ;f 9G$?f<9f ?;f >% $Cf ?>f9?;@N
?; :9f %B? f $;< ; f 9@8 %A; f@; G <= f<=:f <9$%A%8G9f E?89;f
@8E ; f E<9f % % ; : f<=:f E?89;f <?$;f <9f%=8>;=9%A; f B8< f
E<9f ?;f 8>>; %=Bf ?;f F;9 f<:<@ ; :f 8f ?;% f ?< <$; f<=:f< %N
FG ;9f?f ?;f>;9?f 8>f ?;f A%$ % f E<9f 8<9 ; :f 8=f % 8Ef 9@% 9f<=:f
?;f %8 8G9f C8G ?9f E?8f $ 8E : ; :f 8f ?;f >;<9 f <=f =<H; :f <F8G f
?;f >%; :9f E% ?f ;< ?; f ?8=B9f %=f ?;% f?<=:9 $8 G=%$< %=B f
<9f % f E<9f 9G@@89; : f ?;f F ;99%=Bf 8>f >;$G=:% Cf 8f ?;f E8 ;=f
E?8 f ?;Cf 8G$?; : T#f ?;f< < f 8>f <=f E<9f ; ;$; : f@; ?<@9f
FCf A<=:; f ?;f $<:%<=f %=f <f :< % f ;$;99f %=f ?;f9%:;f 8>f ?;f
@< < %=;f ? f E< ; ; :f FCf<f@; @; G<f >% = <%=f<=:f9?<:;:f FCf<=f
?<=B Bf B 8A; f f <:% %8=f ?< f%=f ?;f 9< ;f@ <$; f 8 G G9f
<=:f ; G9f ; ;f 9G$H ; :f FCf ?;f E8 >f ;=:; ; :f % f 9 % f 8 ;f
9<$; :f <=:f A;=; <F ;f %=f ?;f ;C;9f 8>f ?;f 8 <=9f <=:f ?%9f
9C A<=f 9@8 f E<9f B <:G< Cf 9G 8G=:; :f Ef ?;f 9 < ; Cf ; :> %$;9f 8>f
?;f 8 G 11f > ; f ?;f$8=A; 9%8=f8>f ?;f ?=@; %#f $% Cf ?;f
?%9 %<=9f 9 % f$8= %=G; : f%=f ?;f 8= ?f8>f ;F G< Cf ?;f< G <f
$; ;F < %8=f8>f ?;f G@; $< %<f 8f E?%$?f ?;Cf < $=F; :f<9;$; f
<=:f C9 ; %8G9f %=> G;=$;f 8=f ?;f B;=%< f@8E ; 9f 8>f ?;f <=% <f
<=:f A;B; <F ; f E8 : f ?;f F%9?8@9f 8>f 8 ;f E ; ;f98 %$% 8G9f 8

7 3 -1*6-f*+f(0%"*'%#'f(0%f40*"#-#40%&f -*,#&%f 46,*d (* *+f4f . f . f
7 3 -1*6-f$0#f"*!5f6+,%&f 6-(*+* +f1#34#-%,f +#(0%&f $#&)1f1#+-*-(*+2f # f/@Gf
^ -%(%3 (6& f -(#&*%-f #f -#6"-f , %3#+-f 44 &*(*#+-f(0% ,#(2% #f &" (#*6%f
2 +*-3

0f +f(0% 4#%(*1 f $#&8-f #f *,#+*6-f $0*10f 0% '(%&$ &,-f1#+,%3+%,f ^3f *>f
%4*-(f 4f D -Rf (0% f 96"#6-f ,%*(*%-f &%f (0% 4&*+1*4 "0 1(#(-f f %&#3f $ -f
-1#6&2%,f9:f(0% +2%"-f'#&#+")&f &% ,*+2f *&2*"f(0%f9*-0%5f#f" "%&3#+(f'#&f-610f
!*"%*3*((*#+f,%-%&!%,f +f , ,*(*#+ f 0*44*+2f'&#3f(0% 6-%-

If !*,f^A -(f 3f **f D @ ./DR 0 -f2*!%+f +f 36-*+2f,%-1&*4(*#+f (0% '#***%-f #"
+(*F6*(:f $0*10f-(*"f *+-4*&%,f-#f 3610f &%-4%1((0 (f'2& !%f 3 2*-(& (%f &60"V**df
+ 8)f(0&#620f(0% -(&%%(-f $ -f+#(+f #9)%1(f#" -(#+*-0 3%+(f#&" 620(%&

Sf %%f 7*#+: f **1 3f3f*f4f D/f -f%,*(f 6,-#+f4f 0%f %3 +f +(*K
F6 &*%-f #+ (6-f^f**f1f 4f @< @.Rf +,f &,*((*f^4f< f<ZRf0 !%" 9#6&%,f
(# -1%&(*+f(0% (&6% -*(6 (*#+f#"f(0% 64%&1 "
s s &

9%:%8G9ʿ <=:ʿ %=;>>;$ G<ʿ @ 8@89% %8=9ʿ 8>ʾ@;<$;Ð FGʿ ?;ʿ E<9ʿ 9 % ʿ
8 ;ʿ9; %8G9 Cʿ< < ;:ʿFCʿ ?;ʿ ;$8=$% %< %8 %ʿ8>ʾ < $; %=G9ʿE% ?ʿ
?;ʿ E8ʿ; @% ;9ʿ ?;ʿ %=:;@;?:;=ʿ@< %$%<=ʾ ?<:ʿ F;;=ʾ@; N
9G<:;:ʿ 8ʿ<$H=8E ;:B;ʿ ?;ʿ ;B% % < ;ʿ % ;ʿ8>ʾ = ?; %A%9ʿe%>?8 ʿ
?;ʿ<$$8 @<=%;:ʿ%=ʿ?%9ʿI8G =;Cʿ 8ʿ 8 ;ʿÐ ?;ʿ < < %<=ʾ>;;ʿE<9ʿ
;$;%A;:ʿ%= 8ʿ ?;ʿ?< F8G 9ʿ8>ʾ < CÐ ?;ʿ<$ %A;ʿA< 8G ‘8>ʾ < ;; %=G9ʿ
;M@; ;:ʿ ?;ʿ <=:<9ʿ>8 ʿ ?;ʿ%9 <=:ʿ‘8>ʾ < :%=%<Ð <=:ʿ ?;ʿ <=BG%:ʿ
;>>8 9ʿ8>ʾ ?;ʿ ;9ʿ<:;:ʿ98 ;ʿE;%B?ʿ 8ʿ ?;ʿ% ;=9;ʿ@ ;@< <Ð
%8=9ʿ8>ʾ?;ʿ <9 ;=ʾ 8 <=9ʿ ?;ʿ;M@;=9;ʿ8>ʾ?;ʿ=<A<ʿ< < ;= ʿ ʿ
E?%$?ʿ ;8ʿ9;=ʿ<B<%=9ʿ ?;ʿ <=:<9ʿ?<9ʿF;;=ʿ:%9 %=$ Cʿ<9$; N
<%=;:ʿÐ <=:ʿ ?;ʿ $G %8G9ʿ <=:ʿ%=9 G$ %A;ʿ <$$8G=ʿ:%9@ <C9ʿ ?;ʿ
E;< ?ʿ8>ʾ?;ʿ:;$%=%=B;ʿ @% ;ʿ ?;ʿ 8C<ʿ:; ;9=;9ʿ8ʿ@%%A<;ʿ
@< % 8=Cʿ8>ʾ?;ʿ@ %=$;ʿ9G@@%;:ʿ9;A;= ;;=ʿ ?8G9<=:ʿ@8G=:9ʿ8>ʾ
B8 :ʿÐ >8 C09;A;=ʿ ?8G9<=:ʿ@8G=:9ʿ8>ʾB8 :ʿ<=:ʿ9;A;=ʿ?G=: ;:ʿ
?8G9<=:ʿ 8>ʾ 9%A;ʿ E; ;ʿ ;A%;:ʿ <=:ʿ@<%:ʿ %= 8ʿ ?;ʿ ;<9G Cʿ FCʿ
?;ʿ <; 8%<=ʾ@ >;$ 9ʿ G ʿ?;ʿ$% %;9ʿE; ;ʿ ;:G$;:ʿ 8ʿ;M ; ;ʿ
@8A; Cʿ Ð <=:ʿ ?;ʿ:%%B;=ʿ$< $G < %8=ʿ@>ʾ>%=;9ʿ <=:ʿ>8 >;% G ;9ʿ<9ʿ
<ʿA< G<F ;ʿ FI;$ʿ8>ʾ ?;ʿ ;A;=G;ʿ:8;9ʿ=8ʿ9GBB;9ʿ ?;ʿ%:;<ʿ;>ʾ<ʿ
IG9ʿ8ʿ ; $%>G ʿ<: %=%9 < %8=ʿ ?;ʿ E?8 ;ʿ ;M@;=9;ʿFCʿ E?< N
;A; ʿ ;<=9ʿ%ʿE<9ʿ:;> <C;:ʿ8>ʾ ?;ʿ > %$<=ʾ $< @<%B=ʾ< 8G= ;:ʿ
8ʿ ?;ʿ9G ʿ8>ʾ8=;ʿ?G=: ;:ʿ<=:ʿ ?% Cʿ ?8G9<=:ʿ @8 =:9ʿ8>ʿB8 :ʿ
<F8G ʿ>%A;ʿ % %8=9ʿ E8ʿ ?G=: ;:ʿ ?8G9<=:ʿ @8G=:9ʿ 9 ; %%<#ʿ<ʿ<ʿ
% ;ʿ E?;=ʾ ?;ʿ A< G;ʿ 8>ʾ 8=;Cʿ <@@;<=9ʿ>8 ʿ ?;ʿ $8 @< < %A;ʿ
@ %$;ʿ8>ʾ$8 ʿ 8ʿ?<A;ʿF;;=ʿ98 ;E?<ʿ?%B?;ʿ ?<=ʾ%=ʾ ?;ʿ@ ;9;=ʿ
<B;1Tʾ ?;ʿ>;;ʿ ?<ʿ9<% ;:ʿ>8 ʿ 8=9 <= %=8@ ;ʿ 8ʿ G ?<B;ʿ
$8=9%9 ;:ʿ8>ʾ;;A;=ʿ?G=: ;:ʿ<=:ʿ ?% ;;=ʿ9?%@9ʿ<=:ʿ ?;ʿ =G F;ʿ
8>ʾ98 :%; 9ʿ<=:ʿ < %=; 9ʿ;M$;;:;:ʿ 8=;ʿ ?G=: ;:ʿ ?8G9<=:ʿ ; ʿ
<9% %9$G9ʿ ?;ʿF 8 ?;ʿ8>ʾ ?;ʿ; @ ;99ʿ ; %=<ʿE<9ʿ;= G9 ;:ʿE% ?ʿ
?%9ʿ % @8 <= ʿ $8 <=:ʿ %9ʿ 9%9 ; ʿ ?;ʿE%>;ʿ8>ʾ $8ʿ?<:ʿ;M#Ð
<BB; < ;:ʿ?;ʿ ; %ʿ8>ʾ?%9ʿ>8 ;ʿ;M@ 8% 9ʿ<B<%=9ʿ ?;ʿ $C ?%<=9
Gʿ?;ʿ:%9$8A;Cʿ8>ʾ?%9ʿBG% ʿ8ʿ%=$<@<$% Cʿ E<9ʿ ;9; A;:ʿ>8ʿ ?;ʿ
> %$<=ʾE< Ð <=:ʿ?%9ʿ>%;=:9ʿ$8G :ʿ 8= Cʿ 9<A;ʿ?%9 % % < Cʿ ;N
@G < %8=ʿFCʿ<99; %=B?< ʿ?;ʿ?<:ʿ$8=9@% ;:ʿE% ?ʿ 9@< ʿ 8 9I>; ;ʿ
6;=9;%%$ <=:ʿ 8ʿF; <Cʿ ?;ʿ <9ʿ?8@;ʿ8>ʾ ?;ʿ ;9 ;=ʿ; @% ;
M@; %;=$;ʿ?<9ʿ9?;E=ʾ ?<ʿ ?;ʿ 9G$$;#ʾ 8>ʾ<=ʾ%=A<:;
ʿT 1

Q' 0%'4&*+1*'* "-63'*-'1"% &":'%>4&%--%,'9:' &#144*6-'^ %' %"(' +*) "'8' "'1
'4' Ŗ* (0%'-3 ""%& 1#+-(*(6%+(4 &(-'$0*10' '"'%34#+(^ *-(',%-' 34%:%6&-'
(#3'!*'4'< ć 0 -'" 9#&*#6-":'1#""%1(%,''&#3'(04' :-4(*+S'$ %&-'&1 +,*,6-'
A' 'C'*!'4'0<@b' &%"%-'1%&(*+' +,'" --' 34#&(+(0%'0*-(#&* +' "106 '
" 3%+(-'(0%'469"*1'3*-%&:'^ >1%&4('%>' 6*, ')6' #&4'((*-(' :-0('4'/'e'&'D. '
96(' 0%'-'-4&%":'6+)6-(' $0%+'0%'10 &2%-' %#' $*(0'0# &,*+2'(0%'(&5-6& '$0*10'E'
%>(#&(%,''&#3'(0%'4%#4"%' _ #0+' :,6-',%'(, 2'<' .<'%#*$(%-' QG1#-'((
/GGG4#6+,-'#"2#",' +,'@GGGGG' " *"!%&')' $0*10' 44&# 10%-'(0%'-63'2(!%'
&#1#4*6-b

$8 8= C : ; @ ; = : 9 8= ? ; A%B8G <= : $; % C 8> ?%9 8@ ; < %8=9 ? ; 9 ; =B ?< = : 9?< @=; 9 8> ? ; >% 9 % @ ; 99%8= < ; F G= ; : FC : ; <C I ? ; ? ; < ?< = : 9@% % 8 ? ; 88@9 %=9 ; =%F C <=BG%9? %= < : %9 <= $ % < ; ? ; =<A< <= : % % < C >8 $; < %B? C ;>>8 E ?%$?@ ; ?<@9 $<= = ; A ; F ; ; @ ; < ; : %9 9% ; = C $8=9G ; : <= : ; A ; C ?8G ?< %9 E<9 ; : %= = ; B8 %< %8= <$$G9 8 9 ?; ; = ; C 8 $8= ; @ < ; <= : ; M< %= ; ?89 ; ?89 % ; ; 8 9 E ?%$?8= ?; % >% 9 <@@ ; < <=$; ? ; : ; ; ; : % ;%9 %F ; ?; >8 %: N <F ; =<AC 8> <9% %9 ; G9 @G 9G ; : % 9 @ 89@ ; 8G9 =<A%B< %8= > 8 ? ; ? <$%<= 89@?8 G9 8 ? ; $8<9 8> > %$< ; <= : ; : ?%9 88@9 < <@ ; 8=< 8 ? ; @ 8 8= 8 C 8> ; $G C <F8G >8 C % ; 9 > 8 < ?<B ; 1# ?; < C 8> ; <$ %G9 <= : ? ; > ; ; 8> < $; %=G9 ; % ? ; I8%= ; : 8 9 ; $8= : ; : ? ; @ ; %< %; G ; =<= <= : ? ; <= : < 9 E ?8 8@@89 ; : ?%9 @ 8B ; 99 FC 9 ; < 8 <= : E ; ; 9G$$; 99%A ; C A<=JG%9? ; : 1# > <9% %9 ; G9 ?<: ' 9 ; %L ; : ? ; 8 ; = 8> $8=9 ; =< %8= <= : F8 : C < : A<=$; : 8 ? ; $<@% < < ?<B ; G9 ?<A ; 9G ; = : ; ; : <= : ? ; H%=B : 8 8> ? ; <= : < 9 E<9 ; M %=BG%9? ; : 6 ; =9 ; %$ F ; ? ; : ? ; : <=B ; E% ? >% =; 99 <= : ; G : ; : % E% ? ?%9 A ; ; <= : ; M ; % C ; @ 8 ; 9 ; : %= ? ; 89 ; 9@ ; $ >G <= BG<B ; ? ?< ? ; E<9 ; < : C 8 9GF % ?%9 @ ; 98= <= : ?%9 : 8 %=%8=9 8 ? ; E% 8> ? ; ; @ ; 8 FG ? ; ; JG ; 9 ; : < G$; 8> >%A ; R <C 8 ; BG < ; ? ; ; 9 8> ?%9 9GF %99%8= <= : % E<9 G=%A ; 9< C F ; %; A ; : ?< ?%9 9 ; $; %F ; < % C $8= %FG ; : 8 ? ; 9G$$; 99 8> ?%9 @GF %$ = ; B8 %< %8= =9 ; < : 8> 8F9 %=< ; C ; >G9%=B E ?< ; A ; %= : G B ; =$; ? %9 ; = ; C 98 ; < =; 9 C 98 %$% ; : ? ; BG% C 8 ? ; ; ; G 8G9 <9% %9 ; G9 $8=9 ; = ; : 8 ? ; >< < G$; <= : ? %9 % @ G : ; = 9 ; $G % C 9 ; ; : 8 @ 8$ <% ?< ; ? ; <> ; < : C $8=9% : ; ; : ? % 9 ; <9 ? ; $8=JG ; 8 8> > %$< G %=B ?%9 9?8 %= ; A< ? ; E%= : F ; $< ; ><A8G <F ; 8 ? ; : ; 9B=9 8> 6 ; =9 ; %$; <==: ; : ?%9 < B ; 9 9?%@9 8> E< E% ? ? ; F A ; 9 8> ? ; 88 9 <= : <= : < 9 <= : ? ; C 8E ; : <> ; ? ; <=C < B ; F< JG ; 9 >% ; : E% ? $8 FG9 %F ; < ; %< 9 =' ? ; 8F9$G N % C 8> ? ; =%B? ? ; 9 ; : ; 9 G$ %A ; A ; 99 ; 9 E ; ; % @ ; ; : <B<%=9 ? ; G=BG< : ; : <= : G=9G9@ ; $ %=B > ; ; 8> ? ; 8 <=9 E ?8 E ; ; <E<H ; = ; : FC ? ; 9 ; =9 ; 8> ? ; % %=9 <= : <=B ; ? ; % 89 ; <= : $ 8E : ; : 8 ; >; <99%9 ; : ? ; @ 8B ; 99 8> ? ; >% ; E ?%$?' E<9 $8 N G=%$< ; : E% ? <@%: <= : % ;9%9 %F ; A%8 ; =$; <= : #?; =8%9 ;

P 0*-' 4&# 3 #+(#&: '*-' '#& 3*'%-' '&# 3 &(0 2%^ &#4#4 *' 1 4 D +, ($%+(: '% 265' '&# 3 *1*": '^ 0 $T-' & !%"- ' 4 R %*4*# " +, %, ' '6&(0%& *+' (0% 9 : ((0% ' *& 4&# 3 #+(#&: J -%% (0% (** 3 (5 , %-1&*4(*#+' #'' *! : >>*> D 'D@

P I5%#40 +%-' ^4 ' (### '*&4*-' (0 3 +: '-0*4-' #" (0% +, "-' $%&% -6+8 0% - %&(*#((# " #&+ +, %-' ^, % 611%--*#+% %2+ R (0 -*"*-%6-' ((18%, 5 0 %% 36-(9% 6+, %&-(## , '*+' '!%&: F6 0%, -%+5 NN' ! +6 2%

8> ?; E%=: ?; $ <$H %=B 8> ?; >< ;9 ?; :%998=<= $ %;9
8> ?; 98 :%; 9 <=: < %=; 9 E?8 $8G : =;% ?; $8 <=: =8
8F;C %=$;<9; : ?; ?8 8 8> ?; =8$ G =< G G ?% 9
?;C <F8G ; : 8 ;M %$< ; ?; 9; A;9 > 8 ?; >% ;09?%@9 <=:
8 <A; < ; <9 < @< 8> ?; =<AC ?; B< ;C9 8> 6;=9; %$ <9N
9<G ; : ?; E% ? ; @; < ; <=: : %9$%@ %=; : A< 8G <=: <=C
8> ?; 8 <=9 E?8 ;9$<@; : ?; >G C 8> ?; >< ;90 E ; ; : ;9 8C; :
8 <H; = FC ?; A%$ 8 %8G9 <=:<9 8=B ?; ;A;= 9 8> ?<
:%9<9 8G9 =%B? ?; ?; 8%$ 8 < ?; : ;9@; < ; $8G <B;8> W8?=
8=; 8> ?; @ %=$%@< 8>>%$; 9 8> <9% %9$G9 ?<9 ;9$G; : ?%9 =< ;
> 8 8F %A%8= ?; =; ?; 9?%@ E?%$?; ?; ?<: F <A; C : ;>;% : ; :
E<9 < 89 $8=9G ; : ?; ? ; E % 9; >%=; ?%9 < 8G %= 8 ?;
9; <: %9: <%=>G C ; I; $; : ?; ;9 ; ; <=: @% C 8> 6;=98 ?; 98=
8> 6;=9; %$ E?8 @ ;99; : ?% 8 <$$; @ ?8=8G <F ; JG< ; <=:
G=H G=: ; ?; E<A;90 ;M$ <% %=B E% ? ?%9 <9 F ;< ? ?< ?;
E8G : =;A; >< < %A; %= 8 ?; ?<=: 9 8> ?89; % @%8G9 :8B9
$ G< ; : FC < >< : %>>; ;= 9@% % <9% %9$G9 E?89; 9 < %8= E<9
?; 89 ; 8 ; > 8 : <=B; : %9B <$; >G C > ; : = ?; F; B%==%=B
8> ?; ;=B<B; ;= ; G =; : 8 R 0=9 <= %=8@ ; E% ? ?; 899 8>
8 ; ?<= ?< >8> ?%9 > ; ; <=: 0< C <?: 9?; ; ; : ?%9 BG% C
?; <: %= ?; 9<=$ G< C 8> 8@?%< % ?%9 9%9 ; FC ? ; < 9
<=: ;= ; < %; 9 $8G : 8F <%= ?%9 @< :8= > 8 ?; %=: %B=<=
; @; 8 ; <$?%9 ;>>; $; : ?%9 ; ;< ? ?8GB? ?; : ; 9; 4
< $; %=G9 ; % ; : 8 %$% C E?; ; ?; E<9 <99<99%=< ; : @; ?<@9
< ?; %=9 %B< %8= 8> %$% ; FC 8=; 8> ?%9 8E= $<@ <%=9 0 <=:
?; H%=B 8> ?; <=: < 9 ;M@ ;99; : ?%9 9G @ %9; <=: 9< %9><$ %8=
?< ?; 8 <=9 ?; 9; A;9 9?8G : ; 8A; > 8 ?; E8 : ?%9
89 >8 %: <F ; <= <B8=%9 9 T1 > ; ?; >< G ; 8> ?%9 B ;<
;M@; : % %8= 6;=9; %$ <B<%= F; $< ; ?; C <= 8> ?; 9; <0 ?;
$8<9 9 8> < C 6 ; ; $; <=: 9%< E ; <#<%= ;M@89; : 8 ?%9
;A; =B; <=: <A< %$; 0 %@8 % <=: < : %=%< ; G =; : 8 ?%9
8F; : %; =$; 4 ?; <: : ; : %$% C 8 ?; =G F; 8> I%9 @ 8A%=$;90
<=: F; >8 ; ?; :%; : %= ?; >G =;99 8> C; < 9 <=: 8> B 8 C ?; W001=
F; ?; : ?; >%=< ;M %=$ %8= 8> ?; ; @% ; 8> ?; ;9 T#
G %=B ?%9 8=B <=: <$ %A; ;%B= >%; > %$<= 8=< $?? ; : B# / # #
9 G: %8G9 C $G %A< ; : ?; > %; =: 9?%@ 8> ?; < F< %<=9 8> G 8@;
)0

7 3 -1*6-'*+' *(']-*,#&' 46,' 0#('4'*#. e<.Db' ('$*""" 44% &'9:'1#34 &K
+2'(0%(0&%%'-0#&('10&#+%"%-#"(0%('*3%-'(0 (&1%""*+6-0 ,''#620('+% &' &(0 2%'
+,'$ -'8*""%,'*+' *,":' _ 0%', (%'#"'0*-',% (0'*-'2*!%4'*+' +#+' 6-4 b

A#&'(0%' '&*1 +' &'-%%' &#1#4*6-'^,%' % ' +, "' ' *' 1' ' 4' ' <
<R' 0% 40 +%-'^4' ' (## (#*"' %,&%46-'^4' <. ' </G ' <'%,' #++bR' +,'
+ & -'^(#3' **' ' >*!' 4' 5#' / ' _1' (bR' #+(1-F*6%6'^ #+-*,5(*#+-' -6&" '
C& +,%6&' E1 '1' %%# (#3' ***' 4' . @R'0 -' I+* ,% ')6,*1*#6-' #9-%&! (*#+' #+' (0%
' *"6&%#'(0%-%2&% ('+ ! '" &3 3%+(-

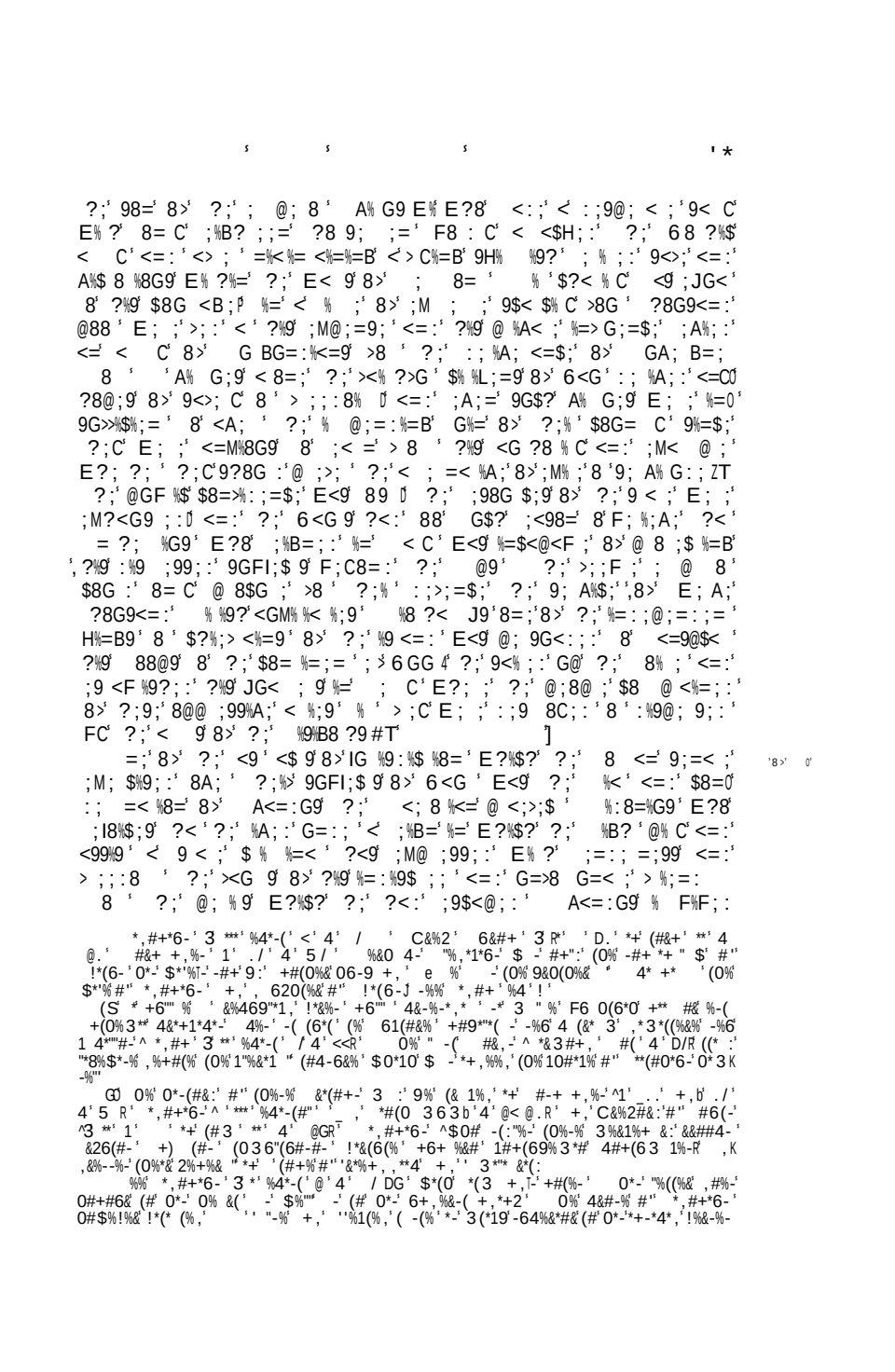
')

E %89;' < 9' 0 %;' %B?' ; @ 8C' %=' <' 9;<98=<F ;' <=:' ;»;$ G<' :%A; 9%8=' <B<%=9' ?;' E8' ;%=@% ;9' > ;' ?;' : ;< ?' 8>' % <' ?;' ;=;E ;:' ?%9' < %<=$;' E% ?' ?;' %9%B8 ?9' 8>' 6<G 0 <=:' ?;' 98=9' 8>' ?;' ; : ; ' ?;8:8 %$' E?8' 9G$$;99%A; C' ;%B=;:' 8A; ' ?< ' E< %H;' =< %8=' E; ;' ;<9% C' @; 9G<:;:' FC' ?;' 9;=9;' 8>'%= ; ;9 ' 8' >8 B;' ?;' $ G;' <>;8= ' E?%$?' 6;=9; %$' ?<:' %=> %$;:' 8=' ?;% ' 9%9; TT' ?;' :;< ?' 8>' ?;' ; @; 8 ' <I8 %<=' :; %A; ;:' ?;8:8 %$' ?;' 9;$8=:' > 8 ' ?;' ;9 <%=' 8>' >;< ' <=:' @; ?<@9' 8>' ?8=8G 0 ?;' A%8 < ;:' ?%9' ;$;= ' ;< C' E% ?' ?;' 8 <=90' <=:' ?;' < @ ;' ; % 8 C' 8>' < F8==;' E?%$?' ?;' >% C'G=% ;:' 8' ?%9' :8 %=%8=9' F;$< ;' ?;' % ;:%< ;' ;E< :'8>'?%9' @; >%:C' ?;' 9; >%9?' @8 %$C' 8>' %$% ;' ;=$8G <B;:' ?% ' 8' %=A<:;' ?;' @ 8A%=$;9' E?%$?' E; ;' %=' ?;' @899;99%8=' 8>' W B%:%G9' ?%9' %A< 0 FG' ?;' <$ %A;' $8G=' FC' ?;' :;>;=$;' 8>' ;9' <=:' ?;' A%$ $#' 8>' ;<=9' 9<A;:' 6<G' <=:' $?;$H;:' :G %=B' ?%9' %>; % ;' ?;' @ 8B ;99' 8>' ?;' %9%B8 ?9' ?;%' < F% %8=' <9' 988=' ;H%=:;:0' <=:' ?;' :;9%B=' 8>';M %=BG%9?N %=B' ?;' 8 <=' ; @% ;' %=' @<%=' <=:' 6<G' E<9' $8=$;%A;:' <=:' < 89' $8 @ ;:' %= ?;' 0 ;%B=' 8>' G %$' E?8' <99<99%=< ;:' ?%9' F 8 ?;' ?;8:8 %$' <=:' :%9@ <C;:' E% ?' <' 8 ;' 9<A<B;' ; @;' G@; %8' <F% % %;9' F8 ?' %=' @;<$;' <=:' E< ' ;' @<99;:' ?;' C ;=;;9' <' ?;' ?;<:' 8>' <' =G ; 8G9' < C' 9GF:G;:' ?;' $% %;9' 8>' < <B899<' <=:' < @; G=<' A<=JG%9?;:' %=' F< ;' ?;' < %<' ,=8F ;9' 8>' ?;' < <B8=;9;' @ 8A%=$;' $< %;:' ?%9' A%$ 8 %8G9' < 9' %= 8' ?;:' ?;< ' 8>' G9% <=%<' <=:' @; % ;:' ?;' G;A%' 8' ?8 :' ?;' H%=B:8 ' 8>'6< %$%<' G=:;' ?;' 6 8 ?%$' 8=< $?C' 8>' @<%=T1' ?;'] »8 9' 8>' G %$' ;' =8 ' ;99' A%B8 8G9' 8 ' ;99' 9G$$;99>G' %=' 6<G 0 <=:0 ? 8GB?8G ' ?;' $8G= C' ?< ' ;M ;=:9' > 8 ' ?;' C ;=;;9' 8' >?;' ?8=;' %:' ?;' 8% ;' ; C' <=:' GA; B=;' E; ;' ?;' 8= C' ;< %;9' 8 ' :%8$;9;9' E?%$?' ;>G9;:' 8 <$H=8E ;:B;' ?% ' <9' ?;% ' <9; #TT' =' ?;' :;>;=$;' 8>' ; 8= ' ?;% ' @ %=N $%@<' 8E=' ?;' %=?<F% <= 9' » GA; B=;' 9G9 <%=;:' E% ?' %=> ;M%F ;' ;98 G %8=' ?;' %9; %;9' 8>' E< ' @;9 % ;=$;' <=:' >< %=;' 0 <=:' ?;' %9%B8 ?9' ; %=JG%9?%=B' ?;' > G% ;99' 9%;B;' 9G9@;=:;:' ?;' ?8@;9' 8>' ?< ' % @8 <= '$8=JG;9 ' ?;' C8G ?' 8>' ?;' @ 8A%=$;' E; ;' ' <=% < ;:' FC' ?;' ?; 8%$' <=:' < 89 '%=$;:%F ;' A< 8G ' 8>' $:%$%=9

0 ' #&+ +,%-' *-' #6&' 9%-(26*,%' (0&#620' (0%' &%*2+-' " 0%#,#&*1' ' +,' 6&*1' ^,%' %96-' #(*#*-' 1' NN' ./ NQ' .@' 4' 5/ R' , (*6-'%+,-'(##'-##+' +,' -*,#&%' *-'(##' -4 &*+2 #" (0%' *+'#&3 (*#+' $0*10' 0%' 3*20(0 !%' 2*!%+' #+' (0%' '' *&-' 4 *+' 0%'%!%+(-'(0 (' &%" (%'(#' C 6'" &%' 9#&*#6-":'*""6-(& (%,'*+'(0%'(0*&,'9##8' #'(0%' 99 ' 769#-' *-(' &*(*F6%'(#&+' *# 4' .D. DG

1* %%' &* + ' *-(' ("-4 0' (#6&'*' 3' !' 1' -' 4' (

'! 3** +' *34%&'%1(' 96(#&*2*+ "' 4*1(6&%'#'' C 6"' 3#(%'%-4%1* "":' #'' 6!%&2+%' *-' -0%$+' 9:' *,#+*6-' J ?8' -' '-%+ (#&' +,' '(%&$ &,-' -' F%9?8@' $ -',%%4":' *+(%&%-(%,'*+'(0%' (%'#'' 0*-' 1#6+(&:' %%' 3' !' !**) #4*-(' '1 /'



$8=>%:;=$;' < ?;' ?<=' E%9:8 D <=:' 9G$?' E<g' ?;' A< %8G9'
?8GB?' =%8 ' % @ G:;=$;' 8>' ?%g' F;?<A%8G ' ?< ' ?%g' @ 89@; % C'
G9 ' <@@;< ' G$?' 8 ;' 9G @ %9%=B' ?<=' ?%g' :8E=>< ' ?;'
9;$8=:' @ <9>;$ G ; ' E?%$?' ?;' 8F <%=;:' E% ?%=' ?;' ; ' 8>' >%A;'
C;< 9' <F8 %9?;:' ?;' ; %' <=:' @8@G < % C' 8>' ?%g' @ ;$;:%=B'
<c?=%=%9 < %$ %' %9' ;<9C' ; @;' E<g' $8 G@ ;:' FC' >< ; C'
<=:' ;M<9@; < ;:' FC' 8@@89% %8=D ?;' E<g' >8 $;:' 8' 9< %9>C' ?%g'
%=%@8 G=< ;' ;:%8 g' E% ?' ?;' 9@8% g' 8>' ?;' @ 8A%=$;D ?%g'
$<@ %$%8Gg' %=98 ;=$;' 8> ;=:;:' ?;' =8F ;g' 8>' 6<G ' <=:' ?;' 9G=H'
G=:;' ?;' E;%B? ' 8>' ?;' @GF %$' ?< ;:' ?;' <=:< ;' 8>' ?%g'
:%9B <$;' 9G 8=;:' ?% ' 8' IG9 %>C' ?%g' $8=:G$ ' F;>8 ;' ?;' 9;=< ;' D
9 :' ?;' @<99;:' ?;' 9;< 8>' G9$<=C' E% ?' < ><A8G <F ;' E%=:' ?;'
@ ;9<B;' <g' ?;' A<%= C' % <B%=;:' 8>' ?%g' >G G ;' >8 G=;9' '
:;$;= ' ;9@;$ ' E<g' 9 % ' 8F9; A;:' >8 ' ?;' ' <=HD
<=:' 8=' ?%g' < %A< ' < ' 8 ;' A<=:Gg' E<g' $8 % ;:' 8' ?;'
?89@% < % C' < ?;' ?<=' 8' ?;' $G9 8:C' 8>' <A%Gg' 9; G9' ?;'
RMOG=' 8>' ?;' 9<$;:' < B;99;9' E?8' ;9%:;:'%=' ?;' <@% 8 ' >I;'
E<g';<B; C' @G 9G;:' ?C' ?%g' <$$G9; 9' ?;' >8G ' :;@G %;g' 8>' 6<G '
E?8' E; ;' < ' :%9 %=BG%9?;:' FC' ?;% ' F% ? 0 ?;% 0:%B=% %;9' 8 '
?;% ' ; 8JG;=$; ' =' ?;' =< ;' 8>' <' B ;< ' @ 8A%=$;' <=:' <$$8 :N
%=B' 8' ?;' >8 g' 8>' 8 <=' IG %9@ G:;=$; ' ?;C' %=9 % G ;:' <' $%A% '
<=:' $ % %=<' <$ %8=' ;JG% %=B' 9G$?' <' ;9 % G %8=' <g' %B? ' $8 N
@;=9< ;' ?;' 89.9' 8>'%=:%A%:G< 9' <=:' 9G$?' @G=%9 G=;=' <g' %B? '
9< %9>C' ?;' IG9 %$;' 8>' ?;' 9 < ;' ?;% ' $?< B;g' 8>' $8 G@ ' 8@@ ;9N
9%8=' E; ;' =G ; 8Gg' <=:' E;%B? CD FG ' ?;C' @ <$;:' ?;% ' 9;$;'
:;@;=:;=$;' 8=' <' ; ; ' E?%$?' ?;C' ?<:' %= ; $;@ ;:' <=:' E?%$?'
?;C' $8G :' @ 8A;' FC' ?;' ;A%:;=$;' 8>' ?%g' 9;$; < C' 8' ?<A;' F;;='
:%$ < ;:' FC' A<=:Gg' ?% %9; >%' ?;' <G ?8 ' 8>' ?%g' ; ;'
9;; ;:' 8' :%99G<:;' ?;' H%=B' 8>' ?;' 6 8 ?g' > 8 ' <@;<$;' E% ?'
?;' ' ; @; 8 D ?;' 9GBB;9 ;:' ?;' < <$H' 8>' ?;' % 8=g' 8='
?;' 8% ;D <=:' ?;' ;$8 ;=:;:' <' :%A%9%8=' 8>' 6<G ' <$$8 :%=B'
8' ?;' <E' 8>' =< %8=9' F; E;;=' ?;' %9%B8 ?g' <=:' ?;' G BG=N
:%<=9'%T1 ?;9;' @; =%$%8Gg' 9$?; ;9' E?%$?' <' > %;=:' $8G :' 8= C'
I<:%< ;' FC' ?;' ;@ 8<$?;g' 8>' A<=% C' <=:' %=:%9$; %8=' ',E; ;'
9G9$;@ %F ;' 8>' <' ;<98=<F ;' %= ; @ ; < %8=D <=:' ?;' ;;@G %;g'
?<:' < >G C' ;98 A;:' =8' 8' @ 8:G$;' ?;% ' 89' >8 %:<F ;'
E;<@8=g' % ' ?;' ;:;$%9%A;' 8 ;=' 8>' ?;' $8= ;9 ' G ' ?;%

G' 0%+' (0% 4*(#" 1% -%,' (#' 0% '(%34"%' *($ -' 44&#4&* (%,' (#' (0%' 6-% #" (0%' 1*!*" 3 2*-(& (%J +,' *(*-' -("" (0%' &%-*,%+1%' #" (0% #$ +' -3((#&' 0%')%$%""%&-' E1' 3*20(9%' ""#* %,' (#' %>4#-%'('%%*& 4&%1*# -' $ &%-'*+' (0%'4#&(*1#%-

,0 %1' ,' &%2%+(C#(0 3$'<F 10 &(' !*,%" (6&'%3*((*'4 1%*+' 163'C' %1#' 3' 4%& (#&%',*--6 ,%+-' &*(++#-'-64%&' *5%&*3'-*(#-'*3462+ &'#4#&(%&%',%3#+-(& + ' 163' 6&26+,*#+*96-')6&%'2%+(*63'C "'%',*!*,' ,%(%%'1#+'*&356-

) 2

$8 @<99%8=ﾟ FG ' ?;' % @G=% C' 8>' ; 8=< G9' <$$G9;:' ?;' IG9 %$;'
' 8>' ?;' ;@GF %$' % ' ?;' E<9' $8=:; =;:' <=:' ;M;$G ;:' 8=' ?;'
;8 @ <%=' 8>' ?;' @;8@ ;' 8>' GA; B=;' ?< ' > <B% %8G9' %=%9 ; '
?;' < % %=;' 8>' ?%9' <B;' <=:' $8G= C' ?; :' <' 9;$;' $8 ;9@8=:;=$;'
E% ?' ?;' %9%B8 ?9' 8' F; <C' ?;' @ 8A%=$;' E ?%$?' ?;' 8@@ ;99;:ﾟ
?%9' %=:G9 C' E<9' $8= %=G< C' ;M; $%9;:' %=' ?;' :%9$8A; C' 8>' =;E'
<M;9' <=:' 8F98 ; ;' 8 >;=$;9ﾟ <=:' ?%9' ;M <A<B<= ' A%$;9' E8G :'
?<A;' %=9@% ;:' $8= ; @ ' %>' ?;C' ?<:' =8 ' ;M$% ;:' >;< ' <=:' <FN
?8 ;=$;1'E

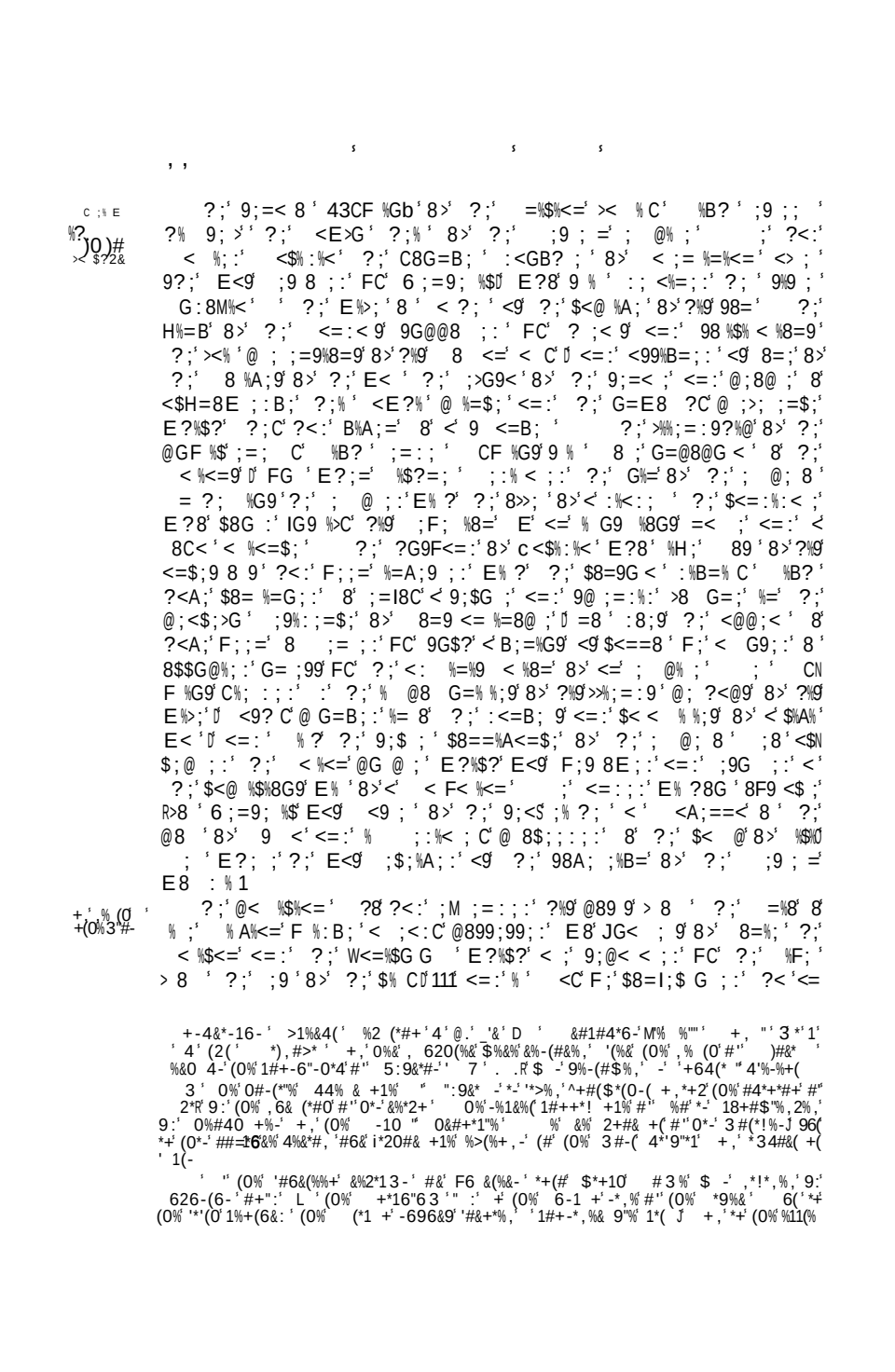
?E8=;' G$?' % %=<9' E; ;' =8 ' F;C8=:' ?;' ;<$?' 8>' IG9 %$;ﾟ FG '
E?< ;A; ' %B? ' F;' ?;' BG% ' 8>' %$% ; ' ?< ' @8E; >G ' < F<N
%<=' <9' <F ;' 8' $8= ;=:' 8 ' 8'=;B8 %< ;' E% ?' ?;' @ %=$;' E?89;'
< %<=$;' ?:' ?<:' $8=:;9$;=:;:' 8' <$$;@ ' ?;' @;<$;>G ' <=:'
@ 89@; 8G9' ;%B=' E?%$?' = ?; %G9' ?<:' @ 8 %9;:' 8' ?;' ;9'
E<9' 988=' $ 8G:;:' FC' %9>8 G=;' <=:' :%9$8 :'] %$% ;' <@@ ;N
?;=9%A;' 8 ' % @< %;= '8>' <' 9G@; %8 ' ; % ;:'> 8 ' 8 ;' <=:' >%M;:'
?%9' ;9%:;=$;' < ' % <=' <=' <:A<= <B;8G9' % G< %8=' ;% ?; ' 8' %=N
A% ;' 8 ' 8' ;@; ' ?;' E< %H;' %F;9' ?< ' E; ;' 9;< ;:' F; E;;=' ?;'
@9'<=:' ?;' <=GF;' < C' E<9' B <:G< C' :%A%:;:' %= 8' E8
%=:;@;=:;=' <=:' ?89 %;' H%=B:8 9' ﾟ <=:' ?;' =8F ;9' 8>' %BG %<'
E?8' ; F;:' <' ?;' =;< ' <@@ 8<$?' 8>' <' $%A%' E< ' >; ' @ 89 < ;'
' <' ?;' >;;' 8>' >%;' @< %$%<=' <=:' $8=IG ;:' ?% ' 8' 9@< ;' ?;% ' G=0
?<@%#' $8G= C' Q 8 ' C' 8E=' @< U' ;@ %;:' %$% ;' %=' <' 8=;'
8>' %=98 ;=' 8:; < %8=' 5' ' < ' 9 % ' %=$ %=;:' 8' ; F <$;' ?;'
> %;=:9?%@' 8>' ?;' 6< < %<=' FG ' E?8' E% ' G=:; <H;' 8' <@@;<9;'
?%9' <=B; ' 8 ' 8' % %B< ;' ?;' @ %:;' E?%$?' < E<C9' %9;9' %=' @ 8@8 0
Y G=%' +C' 9GF %99%8=' ^' U' ?;C' %=>8 ;:' ?% ' ?< ' @%@?<=%G9
F%9?8@' 8>' <A%< # % G=% ;:' ?;' E%9:8 ' 8>' ?;' 9; @;=' E% ?' ?;

' *-- (*"*+ ' -%16"#' +#-(&*' *,#+*6-'3' **' %4*-(' * ' 4' <<J' 3' !' %4*-(' <' 4' .<J' '
!**' %4*-(' @' 4' / ' %' %>%1& (%-' (0% 1&*3 %-' +,' 44" 6,-' (0% 46(**,*3 %+(' #"'
%&#+ (#-' 4%&0 4-' $*(0' (0% *+,*2+ (*#+' #"' ' !*&(6#6-' 1*(*[%+' 4%&0 4-' $*(0' (0%
&1-'*0(3 %6(' #"' ' 4%&-#+(,'%+%3:

S *1*3 %&' 6+,%&' (0% &%*2+' #"' +(0% 3 *6-' ,%'% (%,' +,' -"%$' *+' 9 (("% %#&2#&'
8*+2' #"'(0%' " &**' ^ #&+ 0,%-' 1' ./' 4' 5R' *-' -*-(%& 0 ,' 3 &&%,' (0% 8*+2' #"'
(0% 6&26+,* +-' +,' 0% 3 *+(*+%,' +' *+(*3 (% 1#++%>*#+' $*(0' (0% 6%!*1' 1#"#+:'
%-(9"*-0%,'*+' ++#+* 'H +,' #& 163

"*%'C " (3' %#+1*((6&#' *&4*#+,' ^*+' 0*-' +#(%-'(# ++#,*6-R 44"*%-'(0*-' 44"*K
1 (*#+' (#' &*(0% 3 *+- 0**+ ' ' 0% %((*41' &' $ -' 4&#9 9":' 9# 3' *+' (0% 4&#!*+1% #"'
C " (* ' $0#-% *+0 9*(+(-' (0% "# C&%1* ((-' $%&% -644#-%,'(# 6+*(% (0% !*1%-' #"'
' - ! 2% ' +,' '1#&&64(%,' 4%#4"% ' 5

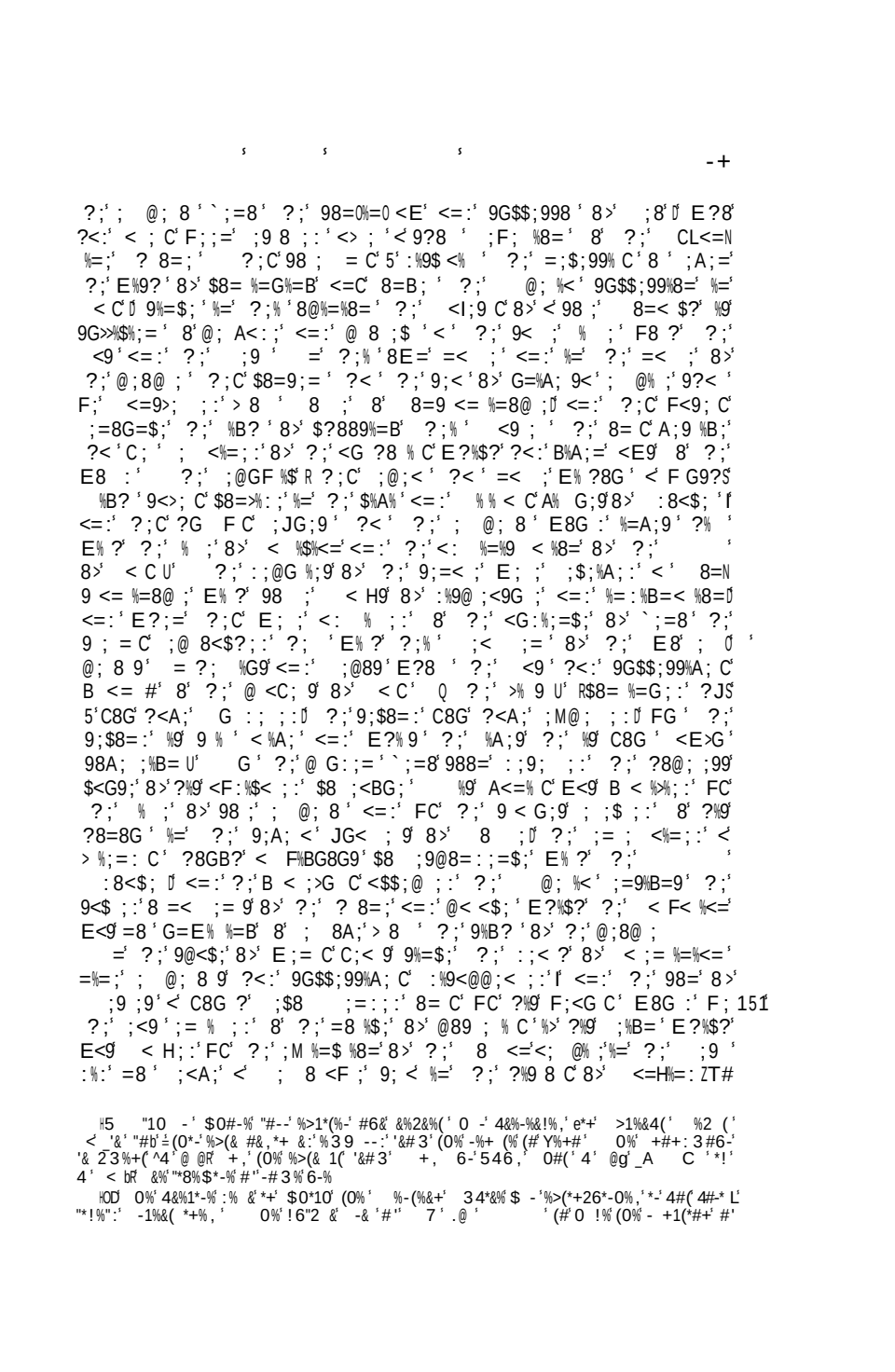
3' 5*40 +*6-' $ ' (0*&(:' % &-' 9*-0#4' #"' !* ' % &' . @ .G@J 9;;' % ; 8 '
,3' 11",-' (#3' >!*' 4' @ ' *-'=< ;' +,' 1(*#+-' $#6",'0 !%' F;;=' G=H=8E=' '
(#' 4#-(%&*(:' *"' ++#,*6-' 8=;' #"' 0*-' -611%--#&-' 0 ' +#(' $&*((%+' 0*-' "*'%^ *&3#'*,' '
4%& ' 8 ' *' 4' .@ 0 g% 14' 44' bR' *+' $0*10' 0%' @ ;9;= g 0*3' -' 8=;' #"'(0%
2&% (%-(10 & 1(%&-' #"'(0%' 2%

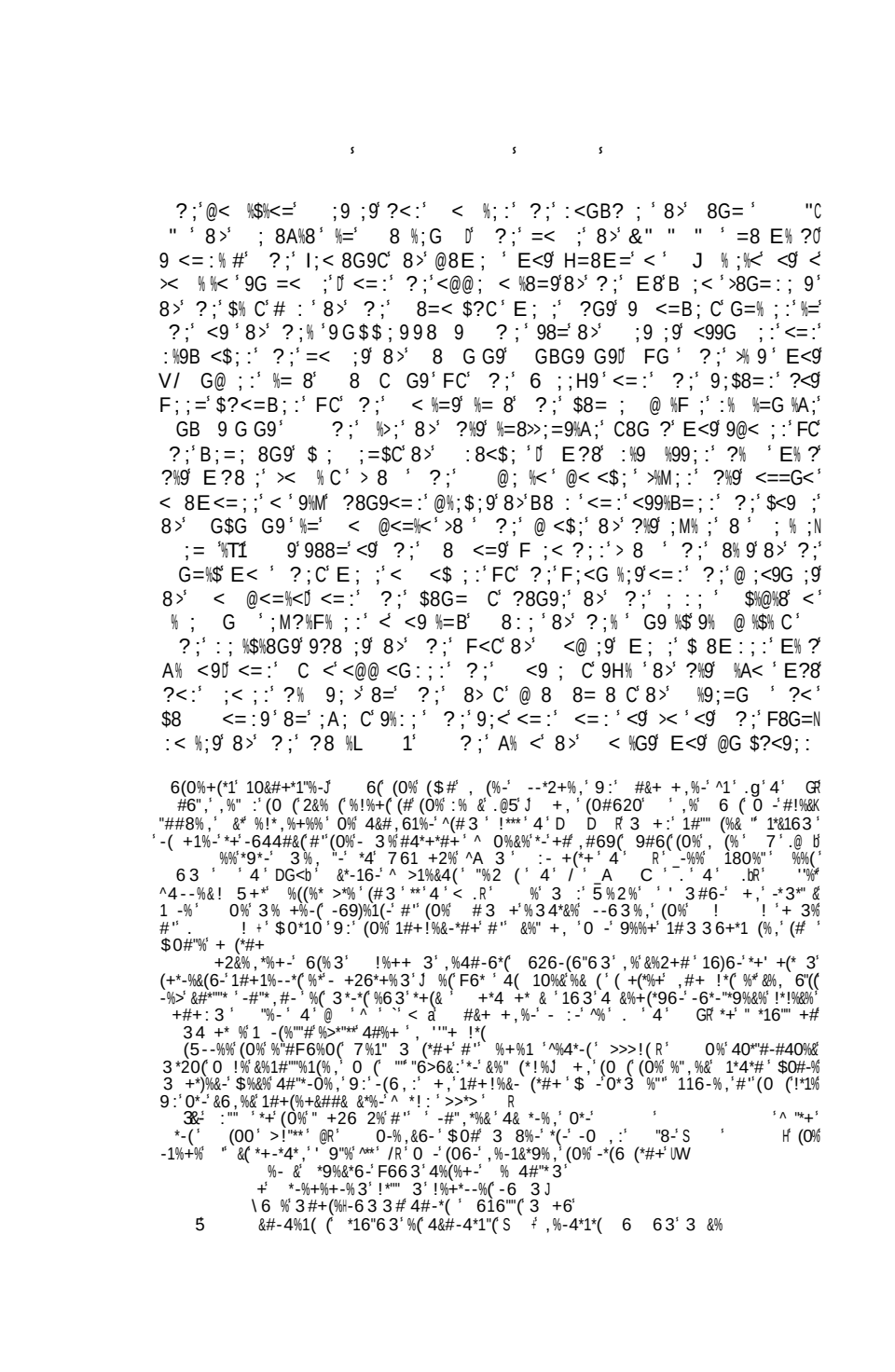


@8@G < ' 9<%= ' 8>' F ;' $8G= C ' 8' 98 %$% ' ?%9' <@@ 8F< %8=' <=:' F ;99%=B ' %;' 8E=;99' 8>' ?;' :88 ' E8G :' =8 ' <: %' ?;' 8> C' 9 < G ;' 8>' :8<$; ' P ?;' E<9' 8F %B;:' 8' 9 88@D FG ' %=' ?< ' ?G F ;' < % G:;' ?;' 9<%= ' $8G :' :%9: ; ' ?;' 9C @ 8 9' 8>' ?%9' >%M G ;' B ;< =;99D <=: ' <: : ;99%=B' ?% ' %=' <' @ 8@?; %$' 8=; ' Q G 9G;U' R9<%:' ?;S' QC8G ' :;9%B=D @ 8$;;:' 8' < C D C8G' E% ' 988=' $<9 ' <E<C' ?%9' $8< 9;' B< ;= ' 8>' 9H%=9D <=:' C8G ' E;< ?' E% ' F;' <:;JG< ;' 8' ?;' %F; < % C' 8>' C8G ' %=:' ?; < F< %<=' 0A ?89;' :< %=B' 9@% % ' <$$;@ ;:' <=:' < %>%;:' ?;' @ ;D ;?$ 8=' E<9' <: % ;:' %= 8' ?;' 9; A%$;' 8>' ?;' ;9 ; =' ; @% ;' <=:' 988=' 8F <%=;:' <=' ?8=8G <F ;' <=H' %=' ?;' BG< :9' %9' <==; ' E ;' B <:G< C' @8 %9?;:' ?%9' % % < C' 9H% ' E<9' % @ 8A;:' < %:' ?;' $8=>;:;< ;9' 8>' < C' E8G :' =8 ' ?<A;' ;' $;:' ?% ' >8 ' ?;% ' B;=; < ' G= ;99' ?;' ;M@ 8% 9' 8>' :8<$; ' ?<:' ;9 <F %9?;:' < ?%B?' 8@%=%8=' 8>' ?%9' $8G <B;' <=:' $<@<$% C % T' ?;% ' % % < C' <$$ < < %8=9' 9< G ;:' ?% ' E% ?' ?;' % ;' 8>' c %=B' FG ' ?;' <FN 9 <%=;:' :G %=B' ?%9' E?8 ;' ;%B %' > 8 ' ?;' G9;' 8>' ?;' @G @ ;' <=:' :%<:; ZT1' ;9 ' ?;' 9?8G :' 8>>;=:' ?89;' @ %=$;9' E?89;' 9GFI;$ 9' FC' ?;% ' <$$%:;= < ' %M G ;' ?<:' >8 ;:' ?;' A%$ 8 %8G9' < C' E?%$?' % ;' <=:' @8 %$C' %B? ' %=9;=9%F C' G=% ;' 8 8' < B ;< '=< %8=

8C< C' E<9' >< % %< ' 8' ?;' < F< %<=9' <=:' ?;' 9GF %99%A;' @;8@ ;' 8>' < C' E<9' @ ;@< ;:' 8' 8F;C' E% ?8G ' < G G ' ?;' <G ?8 % C' E?%$?' ?;' 9?8G :' $8=:;9$;=:' 8' ;M; $%9;' <9' ?;' A%$;N B ;= ' 8>' ?;' ; @; 8 ' 8>' ?;' ;9 ' G ' :8<$; ' ?<:' ;98 A;:' 8' <F;:%9?' ?< ' 9; ;99' <=:' ;M@;=9%A;' 8>>%$;D <=:' 9G$?' %9' ?;' E ;%B? ' 8>'<= %JG;'@ ;IG:%$;' ?< ' % ;JG% ;:' 98 ;' F8 :=;99' . :' @;=; I < %8=' 8' :%9$8A; ' ?;' ;M ; ;' >%%$% % C' 8>' ?;' ;= ; IG%9;' ?;' G=>8 G=< ;' GBG9 G G9' E<9' <:;' ?;' %=9 G ;= ' 8>' ?%9 8E=' :%9B <$;D ?;' 9%B=%>%;:' ?%9' ;9%B=< %8=' 8' ?;' 9;=< ;D <=:' ?< ' <99; F C' %=' ?;% ' <9 ' <$ ' 8>'8F;:%;=$;' 8' < 8 <=' @ %=$;' 9 % ' <>>;$;:' ?;' 9@% % ' 8>'> ;;:8 ' <=:' ?;' >8 9' 8>' ?;' $8=9 % GN %8=' =';@%9 ;' E<9' <:;99;:' FC' ?;% ' G=<=% 8G9' :;$;' 8

D' ,%' ,' (= 3 ' ! ,%' !*"*--*3*-' +6+1' 4%""*96-' 1##4%&(6-J -%,' 36"(*-' 1*(% 4"6&*3 '" &2*(6&6-' & ² "%-' 4' @ @' _Q#' ` %' F6#(%-' (0%' '*'%' #" ' %!%&*+6-' $0*10' *-' %>(+(' +,' 1#+(*+-' 3 6 1O' 6+8+#$+' +,' ! "6 9"%' 0*-(#&:J *($ -' 1# 3 4 #-%,' 9:' 0*-' ,*-1*4"%' 62*44(6-' ' !"' # (0*&(:' :% &-' '(%&' 0*-' ,% (0' %%' *""%3#+(' %3' 11"E' (#3 '>!)' 4' *, * *' %%' 44 ' &b *- 0%#40 +%-' 0# 1 ""-' 0*3' ' C#(0(' ''*&3-' (O (' 0%' $ -' %,61 (%,' +6&-%,' ^'4 *5%! #)R' *+' (":' ^4' GDR' (+, ' -' (0*-'-(&#+2' %>4&%-5+' $*"" +#(' 9% &' '"(%& "' *+(%&4&%((*#+' *(' 36-(' 9%' %>4" *+%,' "#*5 -%&!*1%' *+' (0% 3 4%&* "' 26 &,- ' # 3 %+' &%2*-' ,# 1%&' --6 3 4-*(' 16 3' (3 %+' +%F6% 46&46&0' +%% &%2 (*96-' 6"%&%(6&' *+-*24*96-' --*#,(&' *+' 0&#+' ' 7' .@ ' %'-%% 3-' (#' 0 !%' --6 3 %,' (0%' 9-(& 1(' (*("%'#" '8*+2' $*(0#6(44":*+2' *(#" +:' 4 &(*16" &' + (*#+' #&' 1#6+(&:' +%'-*"!%&' 1#*+' ^ '0 "'-*"*F6 R' -'%>(+(' $0*10' -' 4&#9 9":'*--6%,'9:' ,#! 1 &J _ 0%"%2%+,' ^#9 03*-' "' \ ,e#!RF1' '(+,' (0%'&%!%&-%'-0#$-' (0%' 3 5&(6+'#" ,#! ' 4' #,28*+' (":' +,' 0%&' +! ,%&-' *** @D<' ' ('*-' (#' 9%' +#(%,' (0 (,# 1 &$ -' +#(I = *+2' #" ' (': f -' 0%' ' *+ 116& (5' (:'%,' 9%"#$' 4+' 4' /.' 0%' ,:'#" (%&&*(#&* "&#: "(:' 0 ,' +#(' :%(' 1# 3 %"





- ,

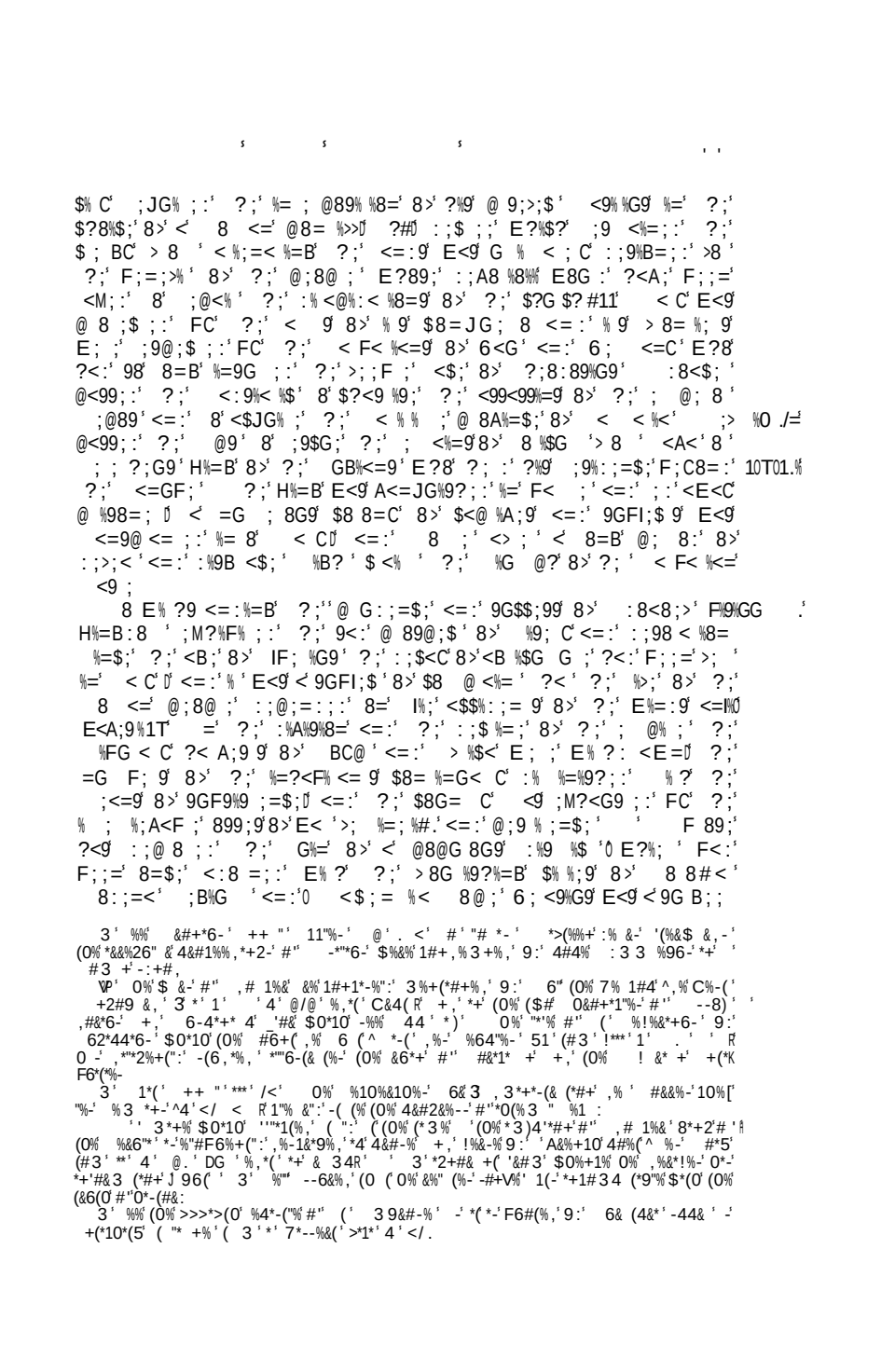
; <F8 < ;' 8@@ ;99%8=' G %=B' ?;' 9< ;' @; %8:' ?;' < F< %<=9' ?<:' ; ; B;:' > 8 ' 8F9$G % C' <=:' $8= ; @ ' <=:' ?;' E< %8 9' 8>' VW; %<=C' <=:' $C ?%<' E; ;' %= 8:G$;:' %= 8' ?;' @ 8A%=$;9' <9' ?;' 9; A<= 9' ?;' < %;9' <=:' < ' ;=B ?' ?;' <9 ; 9' 8>' ?;' 8 <=9' E?8 ' ?;C' %=9G ;:' 8 ' @ 8 ;$;:' ?;' ?< ;:' 8>' ?;' @;8@ ;' E<9' 9G@@ ;99;:' FC' >;< ' D ?;C' ;9@;$;:' ?;' 9@% %' <=:' 9@ ;=:8G ' 8>' ?;' < %<' $?%;>9' E?8' E; ;' %=A;9 ;:' E% ?' ?;' ?8=8G 9' 8>' ?;' ; @% ;D <=:' ?;' >< ;' 8>' 8 ;' ?<:' 8=B' :;@;=:;:' 8=' ?;' 9EF :' 4# ?89;' >8 %:<F ;' 9 <=B; 9' ?;' 9 ; ' %$% ; ' E?8' < @ ;:' 8=' ?;' %=9' 8>' < C' ?<:' ;M; $%9;:' ?;' @8E ; ' E% ?8G ' <99G %=B' ?;' % ; ' 8>' <' H%=BD <=:' ?;' @< %;=' 8 <=9' E; ;' %=9; %F#' @ ;@< ;:' 8' <$H=8E ;:B;' ?;' 8C< C' 8>' :8<$; ' <=:' ?%9' < F< %$' 9G$$;998 9

$?E% ; ' ?;' c %=B' 8>' < C' E<9' =8 ' G=E8 ?C' 8>' ?;' ?%B?' 9 < %8=' 8' E?%$?' ?%9' <8 ' <=:' >8 G=;' F<:' ;M< ;:' ?% D ?%9' 9<A<B;' <==; 9' E; ;' @8 %9?;:' FC' ?;' ?<F%9' 8>' $8=A; 9< %8=D <=:' ?;' ;9@;$;:' ?8GB?' <' $8=JG; 8' <=:' <' < F< %<=' ?;' %=9 % G %8=9' . :' ;A;=' ?;' @ ;IG:%$;9D 8>' ?%9' 9GFI;$ 9' > ; ' <=' %= ; A<' 8>' 9;A;=' C;< 9' :8<$; ' ;9 8 ;:' ?;' $8=9G 9?%@' 8>' ?;' ;9 ' 8' ?% 9;>% ' ?;' 8:;9 C' 8' @ 8G:C' :;$ %=#' <=' ?8=8G ' E?%$?' E<9' 9 % ' <$$;@ ;:' FC' ?;' ; @; 8 9' 8>' ?;' <9 D FG ' ?;' $G G ;' R ;% ' E<9' 9G$$;99%A;C' >% ;:' FC' ;;A;=' 8>' ?;' 89' % G9 %8G9' 9;=< 8 9' <=:' ?;' %9' %9' <:8 =;:' FC' ?;' ;9@;$ <F ;' =< ;' 8>' <# %G9' E?89;' A% G;9' <% ;:' ?;' > %;=:9?%@' <=:' B < ;>G' <@@ <G9;' 8>' %:8=%G9' ?%9' $ % ;= ? ;' <E9' 8>' ?;' ; @; 8 9' E; ;' 9 %$ C' ;=>8 $;:' <=:' ?;' $%A%' <: %=%9 < %8=' 8>' < C' E<9 9 %' ;M; $%9;:' FC' ?;' <; 8 %<=' @ <;>;$' <=:' ?%9' 9GF8 :%=< ;' 8>>%$; 9' :8<$; ':;A8 A;:' 8=' ?;' 8 <=' <B%9 < ;9' ?;' 8:%8G9' <=:' 8@ ;99%A;' <9H' 8>' $8 ;$ %=B' ?;' @GF %$' ;A;=G;' D FG ' ?;' ;9; A;:' >8 ' ?% 9; ' ?;' ; % ' 8>' 9;<98=<F ;' <=:' @8@G < ' %=:G B;=$; Z11' %H;' ?;' ;9 ' 8>' ?;' < F< %<=9' ?;' ?<:' F;;=' %=9 G$;:' %=' ?;' %<=' ?; ;9C D FG ' ?;' ;A; ;:' ?;' 8=<9 %$' <=:' ;@%9$8@<' $?< <$; 9D <=:' ?;' 9% ;=$;' 8>' ?;' < ?8 %$9' < ;9 9' ?;' 8 ; < %8=' E?%$?' ?;C' ;=I8C;:' F;' @;<$;' 8>' ?;

6# 0%'1#+-6"&' A -(* 3 :'9%' 6+ '*+' 2#' #&' 6& (#+' 0%'1#+-6"-' + 3%,' 9:' ,# 1%& !#&' 4%&0 4-' 9:'(0%' +# 3 ' -%+ (%' 44% &'(#' 0 !%'9%%+' 18+#$"%,2%,' *+'(0%' -(%&+' %34*&,*

" ' *,#+*6-' 4#""**4&*-'^ ' *' %4*-(' '4' DD' %,*(' *&+* +,R' 0 -'1#34 &%,'(0%'($# "% ,*+2' -%+ (#&-' #'' **-' (*3 %' ' . R' C%++ ,*6-' !*%+6-' +,' -%1*+ ' -***6-' #'(0%' '#&3 %&' 0%' --*2+-'(0%' -4%1*#6-'(#'(0%" ((%&'(0%' -#"*,' !*&(6%-'#'' 469"*1' +,' 4&*! (%'"*'%' ' -***6-')6+*#&'4#--*9":'0*-'-#+' $ -'1#+-6'"*0'(0%':% &'. 5

4(40 +(-'*+(%&1%,%,''#&'(0%'4%5"%'#'' ! * J +,'(0%'8*+2'2&-('2& +(%,' +' *+,6"2%+1%' #'' '*!%':% &-' +,' '(%&$ &,-' &%"*%!%,'(0%3' '&#3' (0%' #4&%--*#+' #" %" 2*6-'(0%' &-%(#&* +' 4&-%'%1(^ ++#,*6-'*+' *(' (' 4*490+'*+' 8&## ,' 4%&' (4+R'*' 4' &'*:#' @D'4' @'%,' !#2%")



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8>ʻ %W8< ; ʻ < %:ʻ ?;ʻ <>% 9ʻ E% ?ʻ 9 8=B ʻ ;M<BB; < %8=ʻ ?<ʻ %=ʻ W <%?<# =9$> %Cʻ <=:ʻ ?;ʻ <:I<$;=ʻ@ 8A%=$;9ʻ ?;ʻ ?G <=ʻ9@;$%;9ʻ <9< 89ʻ;I:%@< ;: 111ʻ ?;ʻ@ ;F;%<=9ʻ8>ʻ 8 ;ʻ E?8ʻ E; ;ʻ>;:ʻ FCʻ ?;ʻ?<=:ʻ8>ʻ ?;%ʻ <9 ; ʻ@; %9?;:ʻ8ʻ :%9<@@;< ;:ʻ<9ʻ988=ʻ<9 ?%9ʻ %F; < %Cʻ E<9ʻ 9G@@ ;99;:ʻ ?;ʻ :;$%=;ʻ8>ʻ ?;ʻ < 9ʻ ;:G$;:ʻ ?;ʻ %=:G9 %8G9ʻ ;$?<=%$ 8ʻ %: ;=;99ʻ <=:ʻ E<= ʻ <=:ʻ ?;ʻ 9;=< 8 9ʻ E?8ʻ %B?ʻ 9G@@8ʻ E% ?ʻ@< %;=$;ʻ ?;ʻ G%=ʻ8>ʻ?;%ʻ $8G= Cʻ F;E<%;:ʻ ?;%ʻ@ %A<;ʻ 899ʻ8>ʻ E;< ?ʻ <=:ʻ GMG Cʻ =;ʻ ?% :ʻ8>ʻ ?89;ʻ< <@;ʻ ;9 < ;9ʻ 8ʻ E?%$?ʻ ?;ʻ G%=ʻ8>ʻ <Cʻ%9 8 %B%=< Cʻ% @G ;: E<9ʻ;M 8 ;:ʻ>8ʻ ?;ʻG9;ʻ8>ʻ?;ʻ$8=JG; 8 9ʻ =IG %;9ʻE; ;ʻ<BB <A<;:ʻ?Cʻ%=9G 9ʻ ?;ʻ9;=9;ʻ8>ʻ<$ G<ʻ 9G»; N %=B9ʻE<9ʻ; F% ; ;:ʻFCʻ ?;ʻ>;<ʻ8>ʻ 8;ʻ: ;<:>G ʻ;A 9ʻ <=:ʻ<9 =;Eʻ <=:9ʻE; ;ʻ< 8 ;:ʻ 8ʻ=; ʻ 9E< 9ʻ8>ʻ <F< %<=9ʻ;<$?ʻ 9;=< 8ʻE<9ʻ<@@ ;?;=9%A;ʻ ;9ʻ ?;ʻ<F% <Cʻ 9G A;C8 9ʻ9?8G :ʻ <@@ 8<$?ʻ ?%9ʻ><A8G %;ʻ A% <ʻ8ʻ?%9ʻ 89ʻ@ 8>% <F;ʻ>< ʻ ?;ʻ ;<9ʻG=>8 G=<;ʻE; ;ʻ ?89;ʻE?8ʻ9GF % ;:ʻE% ?8G ʻ<ʻ G Gʻ 8ʻ ?;ʻ @8E;ʻ E?%$?ʻ%ʻE<9ʻ % @899%F;ʻ 8ʻ ;9%9 ʻ %=$;ʻ ?;Cʻ :;9% ;:ʻ 8ʻ %A;ʻ ?;Cʻ8E;:ʻ98 ;ʻB<%G:;ʻ 8ʻ ?;ʻ C <= ʻE?8ʻ?<: < ;:ʻ ?;%ʻ % ;9ʻ <=:ʻ 9%=$;ʻ ?;ʻ E<9ʻ ?;ʻ <F98 G ;ʻ <9;ʻ8>ʻ ;%ʻ>8 G=;9ʻ ?;ʻ@8 %8=ʻE?%$?ʻ?;ʻ ;>ʻ G9ʻF;ʻ<$$;@ ;:ʻ<9?%9 @G ;ʻ<=:ʻA8 G= <Cʻ B% %#8ʻ ?;ʻ:%9 ;99ʻ8>ʻ <Cʻ E<9ʻ %%B< ;:ʻ FCʻ ?;ʻ @G:;=$;ʻ <=:ʻ?G <=%Cʻ8>ʻ :8<$;ʻ E?8ʻ?<:ʻF8G=:ʻ ?% 9;>ʻ<9ʻ?;ʻ@ %$;ʻ8>ʻ?%9ʻ ;;A< %8=ʻ 8ʻ9< %9>Cʻ?;ʻ:; <=:9ʻ8>ʻ <ʻ%$;= %8G9ʻ<=:ʻ G FG;= ʻ G %G:;ʻ ?;ʻ H%=B9ʻ8>ʻ?;ʻ <N F< %<=9ʻE;ʻ>;JG;= Cʻ ;9%9 ;:ʻ:=@89;:ʻ8ʻ G :;ʻ FCʻ ?;%ʻ 8ʻ 9GFI;$ 9ʻW <=:ʻ ?;ʻ A< %8G9ʻF<=:9ʻ8>ʻ <%<=ʻ ;$;=< %;9ʻ E?8ʻ <998$%< ;:ʻ G=:;ʻ ?;ʻ 9 <=:<:ʻ8>ʻ <=ʻ;;$%A;ʻ B;=;<ʻ $<% ;:ʻ<ʻ<B;ʻ@ %A%;B;ʻ8>ʻ>;;:8 ʻ <=:ʻ <@%=;ʻ 8=< $?Cʻ :;9%G;ʻ8>ʻ=< %8=<ʻG=%8=ʻ<=:ʻ?;ʻ ;:% <Cʻ %B? ʻ?<9 ;=;:ʻ8ʻ%9ʻ :%998 G %8= > ;ʻ <ʻ ;%B=ʻ8>ʻ>8G ;;=1ʻC;<9ʻ :<$;ʻE<9 8@@ #9;:ʻ FCʻ ?;ʻ9G@; %8ʻB;=%G9ʻ8>ʻ ?;8:8 %$ʻH%=B ʻ8>ʻ?;ʻ 9 8B8 ?9ʻ<ʻ ?;ʻ8ʻ<%H;ʻ ;$;;>ʻ%=ʻ ?;ʻ< 9ʻ8>ʻE<ʻ<=:ʻ8>ʻ B8A;=;=Dʻ E?8ʻ;9 8 ;:ʻ<=ʻ<B;ʻ8>ʻ@;<$;ʻ<=:ʻ@ 89@;%Cʻ<=:ʻ E?89;ʻ=< ;ʻ9 % ʻ;M$% ;9ʻ<=:ʻ:;9; A;9ʻ?;ʻ< ;= %8=ʻ8>ʻ=%<=H%=:0

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" %&63F6%ʻ1#+'*$+(*96 ʻ " (*'1 ,*ʻ4%&,*,%&%ʻ ("* 3ʻ "*+ʻ *-(ʻ (6&ʻ >!***ʻ@ʻ _A#&ʻ,#163%+(ʻ&%1#&,*+2ʻ2& +(#'%-((%-ʻ9:ʻ ,#! &ʻ-%%ʻ 44%+,*>ʻDʻ 314 6%9ʻ &%ʻ(*&% (#4*1-ʻ#'' 1#+-#" (*#+ʻ#& & (0%&ʻ 4'' 4 (*%+1%ʻ $0*10ʻ *1%&# ^ , A 3**ʻ &%-ʻ ʻ *>ʻ %4*-(ʻ 3!$ -622%-(S' (#ʻ 0'%ʻ '&*%+ ʻ 4*&*6-ʻ %(6-ʻ 6+,%& (0% 3*"*(&:ʻ,N4#(*-3ʻ,'' - ʻ 0%ʻ &263%+(ʻ0#$%!%&ʻ#'' Iʻ *!%&%ʻ46*10%&&*36+# ,6>* fʻ*-ʻ 3#&%ʻ'(1*9":ʻ , ,&%--%,ʻ(#ʻ MZ+Q ʻ40*'# 40%&ʻ$0#ʻ 4#--%--%,ʻ(0%ʻ'&%% "(%&+ (*!%ʻ#''*'%ʻ#&ʻ,% (0

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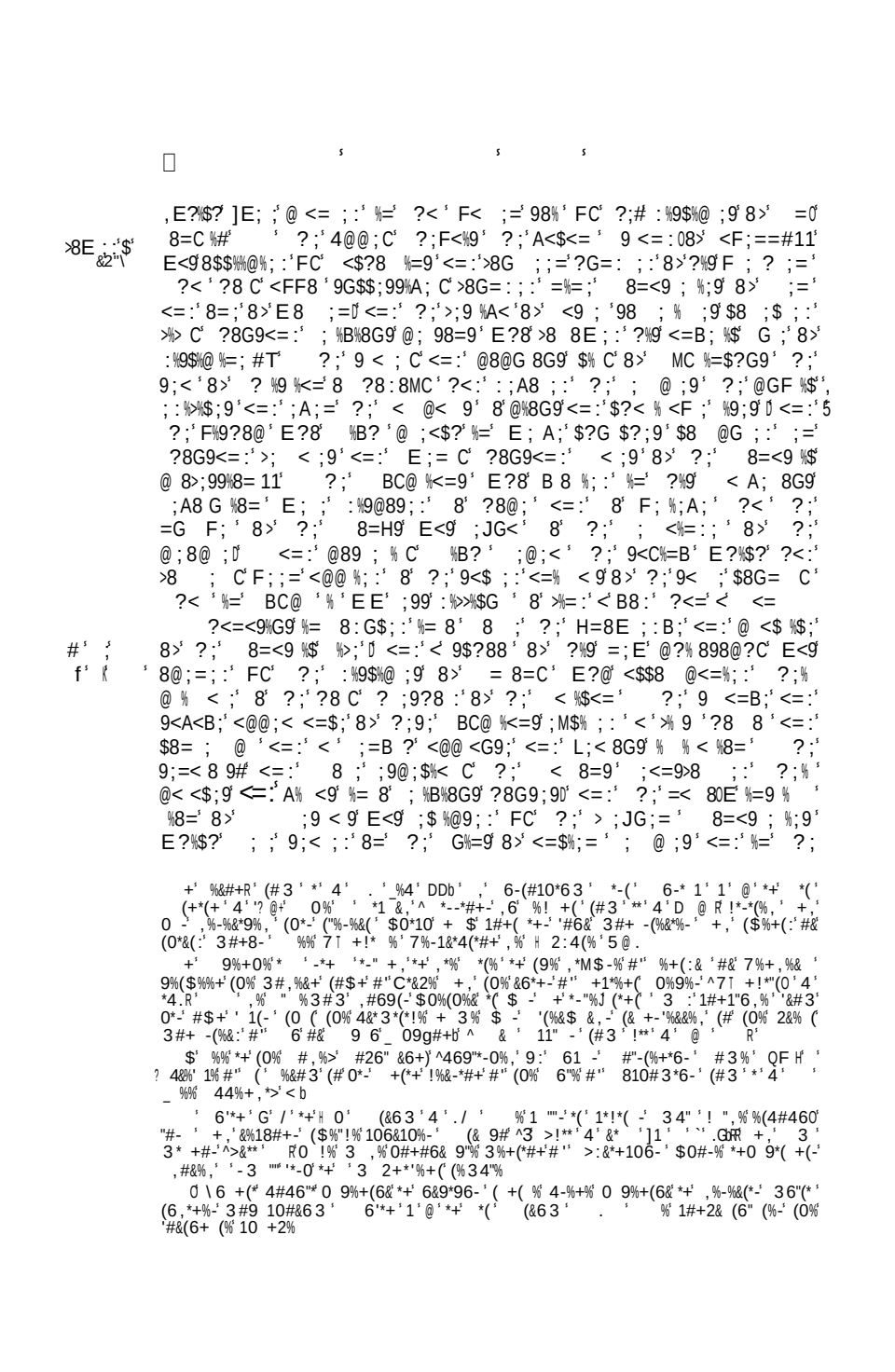

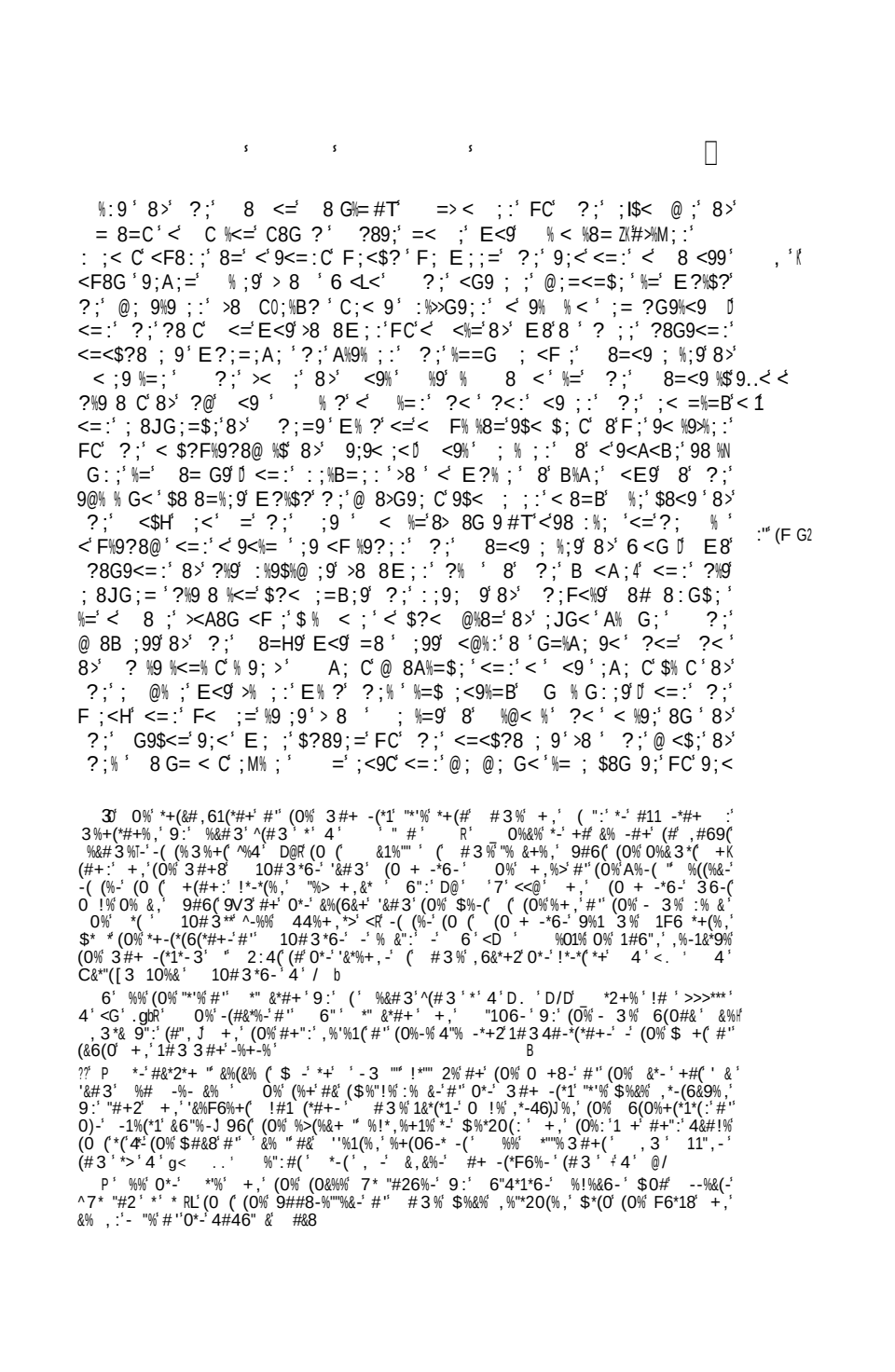

<=: <=: $8==;$; : ?; @ 8A%=$;8> ?; 8 <=E8 : <=: ?; %>; 8> %< %8= :%9@ <C9 ?; ><$%%C E%? E?%$? <= %=:%B;= ?; % 8> <;9%=; %B? <A; 9; BC@ ; F< H >8 %$%C ;9$<@; 8 @% G9 <=: >%=< C 9; ; %= ?; %9 <=: 8> C@ G9 T1 ?; < %= ? %9 %<=9; F <$;: ?; ; %B%8G9%=9 % G %8=9 8> 8 ; ?; @% B % 9 E?8 A%9% ;:W; G9< ; ;<B; C $8@%; ; %= ?; 89 :%9 <= $ % = ;9 8> ?; ;< ? ?; ><% ?>G 8:; 8> ?; 8=<9 %$ %; ?; :%9$%@ ;9 8> = 8=C 9@ :<: ?; 9; A;9 F;C8=: ?; 8@%$ 8A; ?; ? %9 %<= ; @% ; 8> ?%8@%< ?; 8=<9 ; C 8> <=$?8 2# %= %= 9?% ; E?%$? $8= <%=:;:<F8A; E8 ?8G9<=: F ; ? ;= :%9@; ;;:<=G ; 8G9 $8 8=C< 8=B ?; < F< %<=9 8> ; <=: 8=< 8=; 8> ?; ;F %:;9 E?%$? E<9 @<= ;: FC ?; %9? 8=H9:%%G9;:8A; ?;:=8 ?; = ;B%8=9<:8GF >% <C 8>9$%;=$; <=:9G@; 9 % %8= T1

?;9; G=?<@@C;M%;9 > 8 98$%< %>; E; % @; ;: FC ?; :< H <=: % @ <$<F; B;=%G9 8> 9G@; 9 % %8= ?;% G G< ;98 G %8= E<9 9G@@8 ;: FC ?; ;M< @; 8> % %8=9 8>;%?; 9;M 8>;A; C <B; <=: 8>;A; C <=H <=:;<$? @ 89;C; E?8 ;= ; ;: %; B< ;9 8> < 8=<9 ;C E<9 @; 9G<:;: ?< ?; 8: ?; 9 ;;@ <=: ?8 =C @< ? 8> ; ; =< ?<@@%=;99 T# G ?;

DG 0%+ * &*#+- *"%, '&# 3 & %(#+*6 3 (# 4% 10:+6- 0% # '%&%, (# 4 : 0*- 4 -- 2% $*(0 9##8 # (0% C#-4%"- #-(06 3* + C ""*1 3#+8 $0# 0 , !*-*(%, 2:4('#6+, 3%&10 +(5-0*4 9#6+, '&# 3 "%> +,&* (# &-%*""%- +, 4%&'#&3%, ((S !#: 2% *+ (0*&(:, :- ^&6"4 %!%& 7* "#2 * * (0 + -*6- $0# ,&%--%, 0*- *'%#" (+(#+: (# (0% '#&%*2+ 3#+8- $ - #9"*2%, (# 0 -(%+ ("= 1# 3 4#-*(*#+ (0 (*(3*20(9% &% ,: '#& (0%- *""+2 #" (0% '"%%(- ^(#3 ** 4 ./R

3 %% %&#*Q^(#3 * 4 D R --%3 ++* *9"*#(&*%+((#3 *! 4 D 4 /@ 4, C%,,%- 06&10 *-(#&: #" 5,&*#4* D <G < 0% 9)5+* + 3#+8- ,0%&% !%&:-(&*1(" : (# (0% 4&*3*(*!% *+-(*(6(*#+

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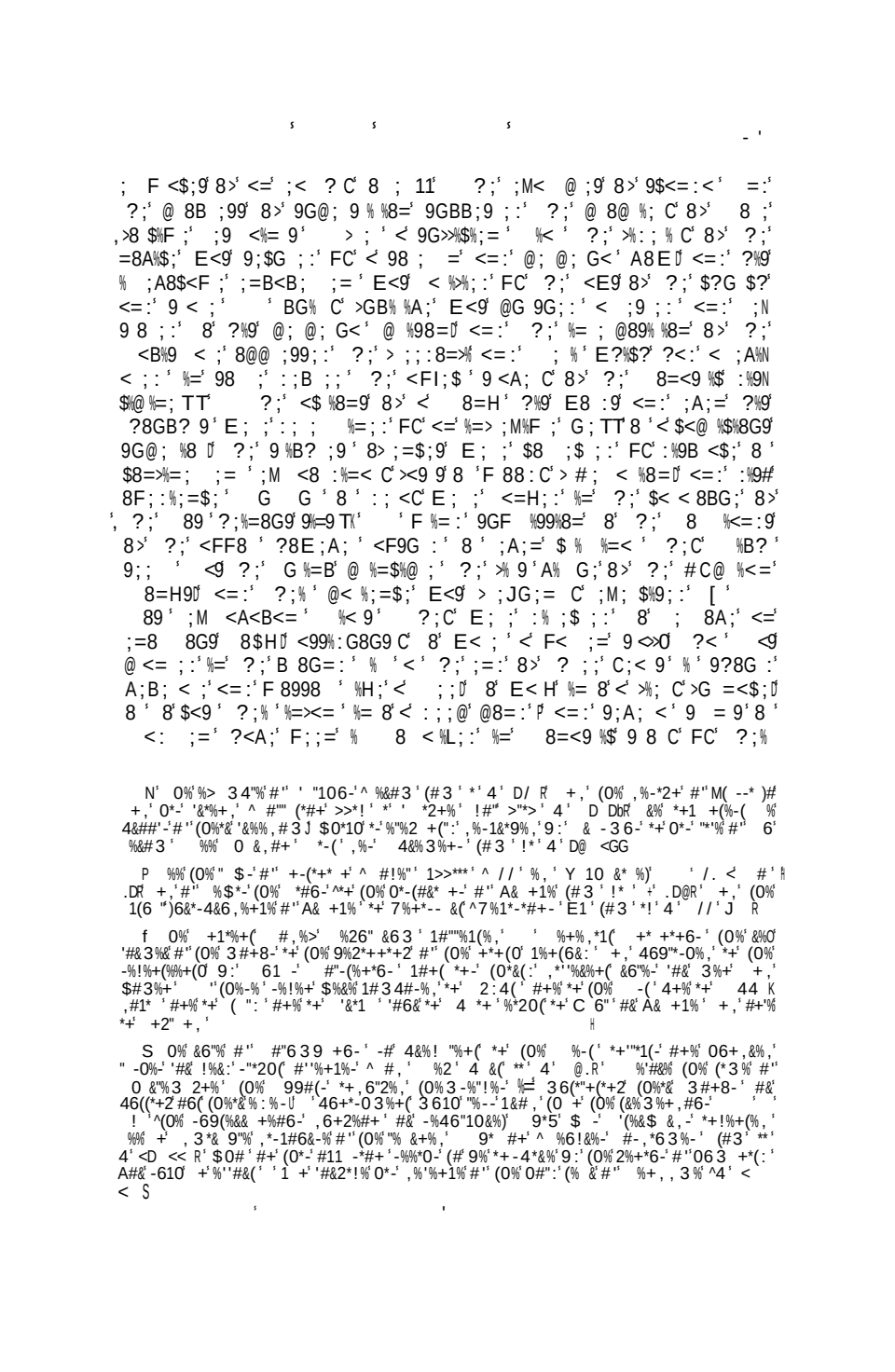
3 (0 ("% &+*+2 1 + %>(& 1('&# 3 (0% &699*-0 #" (0%, &8 2%- *- 1#4*#6-":-((%, 9: &109*-0#4 -0%& *+ 0*- &*(++*1 &6 3 11"%-* &4 3 +(*F6*((%- 1 4 >!* 4 .D/ /G<

&D 0*- -3 " (0#620 +#(9 &&%+ -4#(#+ : #& #"6 3 98*" #+": ($# 3*"%- *+ "% + 5 +, #+% 3 *"% *+ 0&%4,"0 0 5 9%%+,*-(*+26*-0%, * : (0% 3#+ -(%&:# (#"6 3 9 '#6+,%, R / $0#-% 99#(%>%&1*-%, + %>(& #&,*+ &:)6&*51 (*#+ #!%& (0% 9*-0#4- # %,#+* J D : "%9& &: $0*10 ''#&,5 -#3% 0#4%- # + %+(*&% *!:J +, < :(0% (#3 9- # ->(: 8*+2- 1#(- &*-0 +, #&$%2* +-J $0# &%+(%, *+ 0#*: 2&#6+, %% -0%& ^4 < G <@GR +, 610 + + ^ %& 1#(** 4 / %,*(6,,*3 +R

2 0&:-#-(#3 ^*+ (0% '*&-((#3% #" (0% %+%,*1(*+% %,*(*#+R 0 - 1#+-%1& (%, (0&%% 9##8- (# (0% 4'6*-% +, ,%'%+1% #" (0% 3#+ -(*1 "*'% % ^- %+1#6& 2%, 9: (0% %>)+4"% # "(0% &8 (# 4&%-63%(0 (+#+% 96((0% %%1(^(0% 3#+8-R 1 + 4#-K -*9": 9% - !%, ^3 * 4 // /R "-%$0%&% *+,%%, 0% 9%1#3%- 3 &% 3%&1*6 ^3 ** 4 < .R +, ""#$- , * %&%+(,%2&%%- # " 2"#&: "*8% (0% -6+ 3##+ +, -(&- + (0*-"*!%": 3 45-#+ * 8*+2 +, 3#+8 ^ * ** 4 ** &* *R 0% -644#-%- ^:&'& (*- 0 &,": *&R (0 ((0% 8*+2 $* 9% 3#&% -4 &*+2": &%$ &,%, +, 3#&% &*2#&#6-": 46+*-0%,



?8GB? ;99' <=:' >;< ;99' 8F;:%;=$;1T' ?;' > ;;:8 ' 8>' ?;'
%= ' ?;' 98G ;;' 8>' ;A;%C' B;=; 8G9' <=:' < %8=<'?9;=% ;=' E<9'
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8=H' $8= <$ %=B' ?;' A%$;9' 8>' <' 9 <A;' :;A8G C' >8 8E;:' ?;'
><% ?' <=:' @<99%8=9' 8>' ?%9' ;$$;9%<9 %$<' C <= ' ?;' @;<$;' 8>' ?;'
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% ;9' @ 8$;;:9' > 8 ' ?;%' G=%>8 ' < <$? <;% D' 8' <' 9% @ ;' <=:'
@ % =% %A;' 8:;' E?%$?' ?;' ;' <H%=:' ?;'>< ?;' 8>' ><9?%8=' ?<A;' <:;'
%:%$G 8G9' %=' ?;' ;C;9' 8>' <=H%=:' ?;'>< ?;' 8>' ?;' ;=;:%$N
%=;9';M@ ;99 C' :%9$ <% 9' <:' 8>' $?8%$;' 8 ' ; % ' <=:' 98F; C'
;M?8 #' ?%9' :%9$%@ ;9' 8' <:8@ ' ?;' $8< 9;' <=:' $8=A;=%;=' :;99' 8>'
?;' $8G= %;9' E?%$?' ?;C' <C' %=?<F% ?;' 8=<9 %$?<F% 9' 8>'
?;' G=:;=9' A< %;:' E% ?' ?;' $ % < ;' <=:' ?;% ' 8:;' 8>' %>;D'
<=:' ?;C' 9G ;:' E% ?' ?;' 9< ;' %=:%>>;;=$;' ?;' 9?;;@9H%=' 8>'
?;' %BC@ %<=' @;<9<= 9' 8 ' ?;' $ 8<H' 8>' ?;' 6 ;$%<=' @?% 898@?;'
?;C' < 8E;:' ?;' 9;A;9' ?;' G9;' 8>' %=;=' %=' BC@ ' ?;' ;' % ' E<9'
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I;$;:' 9G$?' <=' ;M@;=9%A;' < %$;' 8>' >8 ;%B=' GMG CP#' ' E<9' ?;'
@ <$ %$;' 8>' ?;' 8=H9' ;% ?;' 8' $G ' 8 ' 9?<A;' ?;% ' ?<% D' ?;C'
E <@@;:' ?;% ' F:%:9' %=' <' $ E ' 8' ;9$<@;' ?;' 9%B?' 8>' @ 8><=;'
8FI;$ 9' D' ?;%' ;B9' <=:' >; ' E; ;' =<H;:' ;M$;@' %=' ?;' ;M ; ;'
$8 :' 8>' E%= ; D' <=:' ?;% ' 9 8E' <=:' >;;F ;' 9 ;@9' E; ;' 9G@@8 ;:'
FC' <' 8=B' 9 <>> ' ?;' <9@;$ ' 8>' <' B;=G%=;' <=<$?8 ;' E<9' ?8 %:

S 6'4' %!%&' 7* "#2' ' " ' <' 4' /<D' E1' --* +' +-(*(6(' ' *!' 1' D '
X H & -1*46 '*9' !*&(6 '%(' 4&*3 ' %-(95%+(* I' 3#+2' (0% %&9 ' -%+*#&6*6'
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#9%,*%+1%J +,'(0% %-6*(' #-$%:,%' $0#' 469"*-0%,'(0 (' 062%!#"6 3%''#&'(0%'6-%'
#''1#+!%+(-' 0 -'1#""%1(%,' "" ,*%'-1 ((%&%,'4 -- 2%-'*+' 0*-'($#'1#4*#6-'*+,%>%-'

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^ +-(*(6('3'*R'(#$0*10' #[#3%0'^3'***' 1' .R ((&*96(%-' -610' ""%2#&*1 ' 3% +*+2'
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6' %2 '' %+%,*1(' #' //'*+' #,' %26"' 4 &('*'4' -*K

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< R'(#,#'"-*,#&%*0(-'*,4'#'"5!*""%M %' <'*+' #,' 5+"'4 (** 4'D .R

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1#3 36+*(%-'#'' (' 10#3*6-'*+' (0%''#6&(0' 1%+(6&:' (' -'4&#9 9":'9#&&#$%,'
'&#3'(0% -1%(*1-' '' %& 4*-' 4' 44%+,*>'<b

<=:ʻ :%9BG9 %=BD ;A; Cʻ 9;=9< %8=ʻ ?<ʻ %9ʻ 8%>;=9%C;ʻ -ʻ =I<=ʻ E<9ʻ ?8GB?ʻ <$$;@ <F ;ʻ 8ʻ 6 8 :ʻ D <=:ʻ ?;ʻ <=B; %$ G ;ʻ 8>ʻ <F;==;ʻ $8=: ; =; :ʻ ?;ʻ 9< G < Cʻ $G9 8 ʻ 8>ʻ F< ?%=Bʻ ?;ʻ %%=F9ʻ %=ʻ E< ; ʻ]<=:ʻ8>ʻ<=8%= %=Bʻ ?; ʻE % ?ʻ 8% ## ?;ʻ<G9 ; ;ʻ% %8=H%ʻ9 ;@ ʻ8?ʻ ?;ʻ B 8G=: ʻ8=ʻ <ʻ ?< :ʻ <ʻ8 ʻ<ʻ 8GB?ʻ F <=H; D<=:ʻ 9< ;ʻ FG=: ;ʻ 8>ʻ@< 0 ;<A;9ʻ 9; A;:ʻ ?; ʻ<9ʻ<ʻ 9;<ʻ %=ʻ ?;ʻ :<Cʻ <=:ʻ <ʻD# 8 E ʻ %=ʻ ?;ʻ =%B? ʻ ?;% ʻ 8 %B%=<ʻ $; 9ʻ E ;ʻ 8%Eʻ=< 8Eʻ ?G [ʻ FG% ʻ 8>ʻ ?;ʻ 9 %B? ;9 ʻ < ; %< 9ʻD E ?%$?ʻ >8 ; :ʻ FCʻ ?;ʻ ;B: <ʻ :%9 %FGN %8=ʻ8>ʻ ?;ʻ9 ;;9ʻ<ʻ < B;ʻ<=:ʻ@8@G 8G9ʻA% <B;ʻ%=$ 89%=Bʻ E % ?%=ʻ ?;ʻ $8 8=ʻ E< ʻ <ʻ $?G $?ʻ<=ʻ ?89@% < ʻ@; ?<@9ʻ< %F < Cʻ98 ;ʻ =;$;99< Cʻ 8>>%$;9ʻ<ʻ B< :;=ʻ<=:ʻ<ʻ >8G= <%=ʻ 8ʻ ;9; A8%ʻ8%ʻ> ;9?ʻ ,E< ; ʻ ?% Cʻ8ʻ>8 Cʻ F ; ?;=ʻ$8 @89;:ʻ<ʻ >< %Cʻ8>ʻ9;@< < ;ʻ :%9$%@ %=;ʻ <=:ʻ :%; D <=:ʻ ?;ʻ B ;<ʻ 8=<9 ; %;9ʻ8>ʻ BC@ʻ$8=N 9%9 ;:ʻ8>ʻ ?% Cʻ8ʻ>8 Cʻ>< %%;9

;<9G ;ʻ<=:ʻ BG% ʻ< ;ʻ 9C=8=C 8G9ʻ ; 9ʻ%=ʻ ?;ʻ <=B #ʻ8>/V> V=.% ?;ʻ 8=H9ʻD <=:ʻ ?;Cʻ ?<:ʻ :%9$8A; ;:ʻ FCʻ ;M@; %;=$;ʻ ?< ʻ13#:ʻ ><9 9ʻ <=:ʻ <F9 ; %8G9ʻ :%;ʻ < ;ʻ ?;ʻ 89ʻ ;>>;$ G<ʻ @ ;9; A< %A;9ʻ <B<%=9ʻ ?;ʻ % @G ;ʻ :;9% ;9ʻ8>ʻ ?;>;9? Tʻ ?;ʻ G ;9:>ʻ<F9 %N =;=$;ʻ E?%$?ʻ ?;Cʻ % @89;:ʻ 8ʻ@ <$ %9;:ʻ E; ;ʻ =8ʻ G=%>8 ʻ8 ʻ @; @; G< Pʻ ?;ʻ $?;; >G ʻ>;9 %A<ʻ8>ʻ ?;ʻ ;= ;$89ʻ <9ʻ F< <=$;:ʻ FCʻ ?;ʻ ;M <8 :%=< Cʻ 8 %>%$< %8=ʻ8>ʻ ;= D ?;ʻ>; A8G ʻ8>ʻ=;Eʻ 8=<9 ; %;9ʻE<9ʻ %=9;=9%F Cʻ ; <M;:D <=:ʻ ?;ʻ A8 <$%8G9ʻ<@@; %;ʻ 8>ʻ ?;ʻ 6<G 9ʻ $8G :ʻ=8ʻ% % < ;ʻ ?;ʻ@< %;=ʻ <=:ʻ ; @; < ;ʻ A% G;ʻ 8>ʻ ?;ʻ BC@ %<=9 1Tʻ ?;ʻ :%9$%@ ;9ʻ 8>ʻ = 8=Cʻ <=:ʻ <$?8 %G9ʻ ʻ E; ;ʻ 9< %9>%;:ʻ E% ?ʻ ?;% ʻ :<% Cʻ @% <=$;ʻ 8>ʻ E ; A;ʻ 8G=$;9ʻ 8>ʻ F ;<:ʻ8 ʻ < ?; ʻ F%9$G% 1Tʻ E?%$?ʻ ?;Cʻ :%A%:;:ʻ %= 8ʻ E8ʻ> GB<

0

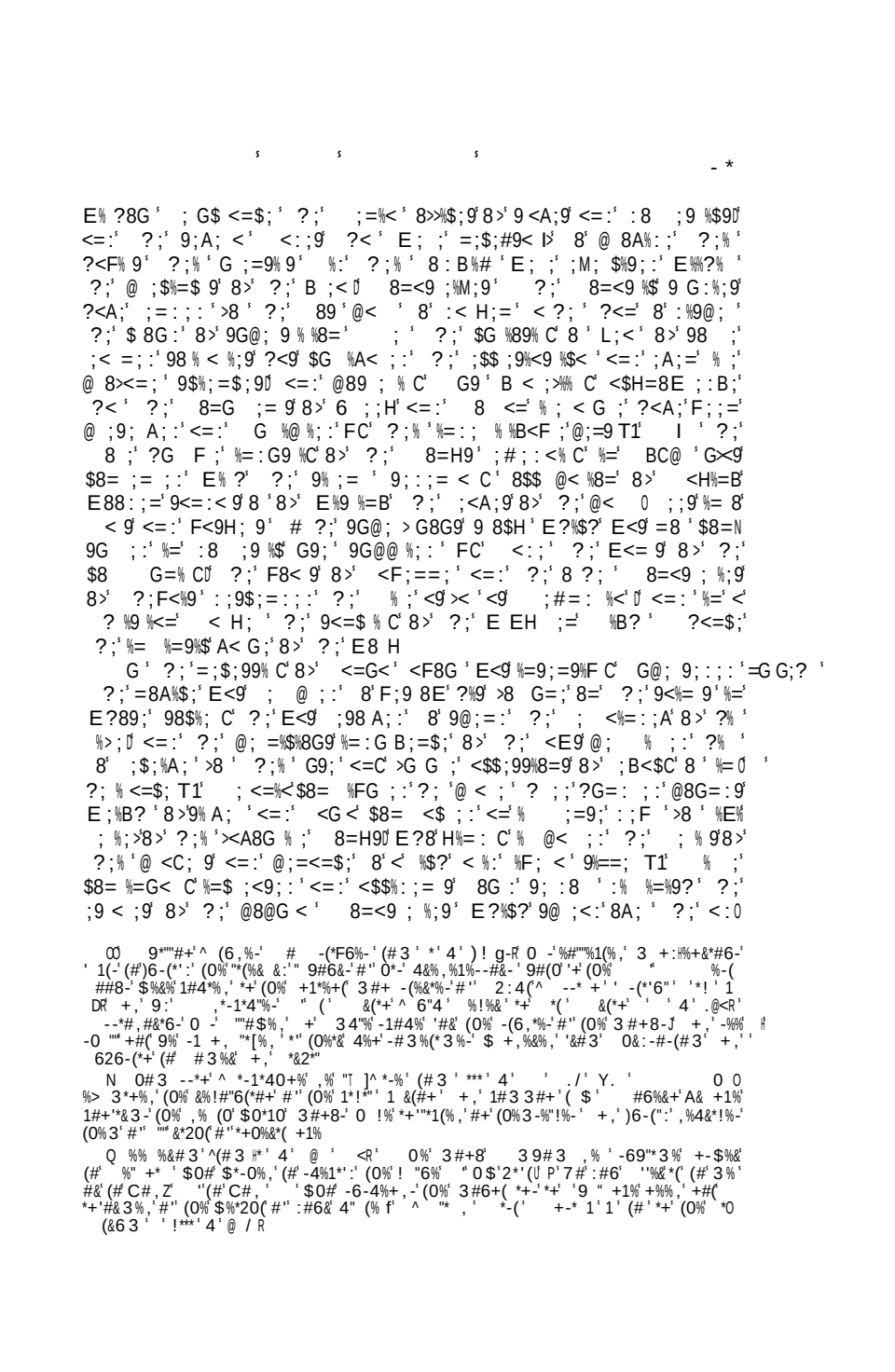
OO #3%ʻ 4 &(* ʻʻ *+,6"2%+1%-ʻ $%&%ʻ 2& +(%,ʻ 'ʻ#&ʻ(0%ʻ 0 +,-ʻ +,ʻ '%%(ʻ P #6++ʻ ʻ **(%3ʻ1#&46-ʻ +%3ʻ# 6+26%(ʻ+*-ʻ# 1 6- ʻ*+ʻ*&3*((*-ʻ'+%1ʻ" ! 9*(& 3*ʻ(+6,#1#&4#&%ʻ +*-ʻ* " +26#& 4%&-4*166-ʻ -*(Iʻ ^ %26"ʻ 10#3ʻ >1**ʻ 4 &(*ʻ*ʻ 4ʻ@ R

(ʻ %&# 3ʻ*+ʻ -(&#+2ʻ 96(ʻ *+,*-1&%%('" +26 2%ʻ%>4&%--%-ʻO(O% 3#-(*34#&(+(ʻ 6-%#ʻ'ʻ -(*+2ʻ +,ʻ 9-(*+%+1% Dʻ Pʻ #+ʻ26#,ʻ 7%+-ʻ6+*!%&-*((*ʻ &% (4&%(ʻ 7#3*+6-ʻ *+(%-(*+# 3 3ʻ+#-(&#&6 3ʻ &62*(+ʻ%(ʻ*+ +*((%ʻ!%+(&*-ʻ46"3#+*-F6% &,#&%ʻ,%"%1(%(6&ʻ -%,ʻ F6#,ʻ "*(%& 46,*1*(*ʻ (6(ʻ%--%ʻ +#+ʻ A#--*(ʻ T ^ 4ʻ (#3ʻ*ʻ 4ʻ w&!ʻ ,ʻ +-(#ʻ 10*63ʻ _ʻ 4ʻ +bRʻ %%ʻ (0% ($%"(Oʻ +,ʻ ($%+(: -%1#+,ʻ #"" (*#+-ʻ#ʻ" --'%+ʻ ʻ 1 +,ʻ ʻ- !) ! ʻ X

Pʻ , 1*(-ʻ*+ʻC&-%1*-ʻ26" ʻ%-(ʻ*+ʻ C ""*-ʻ+ (6& ʻ^7* "#2ʻ*ʻ1ʻ ,ʻ4ʻ& *R ---* +ʻ ʻ *&":ʻ#$+-ʻ (0 (ʻ (0% 4%&ʻ%1(3#,%" #" 9-(*+%+1% 1 +**#(ʻ 4%*3*((%,ʻ*+ʻ C #"ʻ#+ʻ 11#6+(ʻ #" (0% %&6 3ʻ (%34%&*%-ʻ +,ʻ(0% F6 "*(-ʻ +#-(&3ʻ& 2**((*-ʻ^ +-(*((ʻ *!ʻ **R ʻ 3#+2ʻ(0% %-(%&+ʻ &6"%-ʻ(0 (ʻ#" #"6 3 9 +6-ʻ*-ʻ (0% 3#-(6-(%&%ʻ 9%ʻ0 ,ʻ 9%%+ʻ %,61 (%,ʻ 3*,-((0% 4#!%&(:ʻ#" &%" +,ʻ -ʻ &*2*,ʻ4%&0 4-ʻ3*,ʻ* '"% ,9"%ʻ -ʻ (0%ʻ 9-(%3*#6-ʻ!*&(6%#" 2:4(ʻ 0% 6"%#ʻ" -*,#&%#" %("" ʻ* (0% 3*",%-(*ʻ#+ʻ 0#"*, :-ʻ0% ""#$-ʻ(0% 6-%#ʻ'"%-0

Pʻ 0#-%ʻ$0#ʻ,&*+8ʻ#+":ʻ (%& +,ʻ"6*!%ʻ+#ʻ++(&*(*#6-ʻ F6(ʻ3*20(ʻ(((%-(ʻ (#ʻ0 !%ʻ ʻ4#6+,ʻ +,ʻ ʻ0 "ʻ E7 6 ! ʻ %Mʻ ʻ9&5,ʻ%!3:ʻ ('% #ʻ *-#+-ʻ4ʻ.G 9:ʻ &ʻ #)! &*

Mʻ %%ʻ -* + #"" ('3ʻ**ʻ DG < ʻ 0%-3 ""ʻ"# !%- #&9* % *(#'-*- (3%%-



I<; ; = $8 % I <=W $% %; g D <= : %= ?; >% 9 $; = G%C 8> ?; % %=9 % G %8= ?; %=>%: ; ` 89% G9 ?<g < %$%8G9 C 8F9; A; : ?< >8 ?; F; = ; >% 8> ?; @88 ? ; ? %9 %<= 8=H9 ?<: ; C; : G$; : <
PB ; <' @< 8> <=H%=) 8 <' 9 < ; 8> F;BB< C T11 9 8=B <g ?; C <%= <%=; : ?; % 8 %B%=< ; %A8G ?; C <@@ 8A; : ?; 9; A; 9 ?8E; A; ?; >< %? >G <= : F; = ; A8 ; = 9 ; E< : g 8> ?; $?< % C E?%; ?E<g ; < 89 ; : 8 ?; % $< ; G ?; % : %9$%@ %=; E<g $8 N G@ ; : FC @ 89@; % C ?; C B <: G< C <99G ; : ?; @ %: ; 8> E; < ? <=) < <9 %=: G B; : ?; GMG C @> ; M@; =9; ?; % @GF %$ GM % C %B? F; ; M$G9; : FC ?; <B=%>%$; =$; 8> ; %B%8Gg E8 9?%@ <=: % ; : ; $; = 8 %A; 8> ; ; $ %=B : G <F ; ?<F% < %8=g >8 <= % 8 < 98$%; C G ; A; C <B; 8> ?; $?G $?? ?<g <$N $G9; : ?; %$; = %8G9=; 99 8> ?; : ; B; =; < ; 8=H9 E?8 =8 8=B; ; ; F; ; : ?; 8FI; $ 8> ?; % %=9 % G %8= 7; F <$; : ?; A<%= <=: 9; =9G< @ ; <9G ; g 8> ?; E8 : E?%$?? ?; C ?<: ; N =8G=$; : T#<=: 9$<= : < 8G9 C <FG9; : ?; %$?; g ?%$?? ?<: F; ; = <$JG% ; : FC ?; <G9 ; ; A% G; g 8> ?; % >8G=: ; 9 TT WK?; % =< G < : ; 9$; = % 8 9G$?? @<%=>G <= : : <=B; 8G9 A% G; 8 ?; $8 8= A%$; g 8> ?G <=% C E% =8 @; ?<@9 ; M$% ; G$?? B %; > 8 %= : %B % < %8= ? ?; %=: 8> < @?% 898@?;
= 9% .R:% .); ?T A; g 8> % ; @ % % %A; 8=H9 E ; ; $8=9G ; : %= @; =<% $; <=: 98 % G: ; G=: %9 G F; : FC ?; A< %8G9 8$$G@< %8=g E?%$?? >% ?; % ; <=: ; M; $%9; ?; ><$G %; 9 8> ; <98=<F ; <$ %A; <=: 98$%< F; %=B9 ?; =; A; ?; C E; ; @; % ; : 8 ; @ F; C8=: ?; @ ; $%=$ g 8> ?; 8=<9 ; C E8 I; < 8G9 $8 @<=%8=g E; ; ?; G G<: BG< : g <=: 9@%; g 8>; <$?? 8 ?; g <$ %8=g D <=: ; ?; % ; G =; ?; C E; ; $8=: ; =; : 8 >8 B; 8 < ; <9 8 9G@@ ; 99 E?< ; A; ?; C ?<: 9; ; = 8 ?; < : %= ?; E8 : <=B; 9 E?8 @ 8>; 99; : ?; 8 ?8: 8M ><% ?; E; ; ?89@% <F C ; = ; <%=; : %= <
9; @< < ; <@< ; = D FG ?; % : <=B; 8G9 $8=A; 9< %8= E<g ; N
9 %$; : 8 98 ; $?89; =; : ; g 8> <@@ 8A; : %9$; %8= <=: > %: ; % C

I @8#.V . - ' G / ^$ = H M ' X =X .*P 5 -*)4 3 4 <D5 1 D<b %(' (0% $%- O #'' (0% -(%&+ 4*#+8- ! (- & -6(4 --%, 9 : (0% 4&*+1%":2&% (+%--# ' (0% %+%, *1(*+%- ']

-" 0% -*>(0 2%+%& " #6+1*" e(0% \ *+*-%>(*+ : 3 *(- (#+ (!** *+ %!%&*, 2%) (#3 * ' 4 G <R &%-(& *+- $#3%+ '&#3 4 1*+2 (0% +*20(*+ 3 "% ' #& 3%+ *+ '%3 "% ' 3#+ -(%& : 0% -%!%+(0 2%+'*& '1#6+1*" ^(0% -%1#+, ' '5*1%*(% +#+ >%# *+ %!%&*, 2%' (#3 * ' 4 <0 R 4&#0*9*(- (0% %&%1(*#+ #" , #69"% #& 4&# 3*-16#6- 3#+ -(%&*%- #'' 9#(0 -%>% J 96(*(44% &-' &#3 "- 3#+ (0 ((0% 4&#0*9*(*#+ $ - +#(%''%1(6 " +) (0% **!%26" & 4"% -6&%- +, %>4%+-%- #* (0% 1"%&2 : +, -%% 0#3 --*+ (#&+ **R 4Q << . < 8

$ ' 0 !% -# 3 % $ 0 %&% 0% & , ' #& &% , ' (0% ' (+0 1#+ '% --*#+ #" ' %+% , *1(*+% 99#(J I : ! #$ ' #'' 4#!%&(: ' 0 *- 2*!%+ 3 % +2 06+, &% , ' (0#6- +, ' 1&# $ 3 - : % & J 3 : ! #$ ' #'' #9% , *%+1% 0 -' & *-% , ' 3 % (# (0% & +8 #" ' -#!%& 3 2+ 4&*+1% ' '#&2%(^0% 1#+-%K F6%+1%- #'' 0*- ! #$ ' #''10 -(*(: ' ;

M$;@ ' %=' ?;% ' @ ;9;=$;' ?;' F=<9 %$0 9 <A;' %B? ' =8 ' ;$;%A;' ?;' A%9% 9 8>' ?%9 > %;=:9 8 ' H%=: ;:0 <=:' % ' E<9 :;; ;:' ?%B? C' ; % 8 %8G9 %>' ?;' <>> %$;:' <' ;=:;' <9 ; ' 8 ' <=' <B;:' @< ;=' FC' ?;' 8F9 %=< ;' ;>G9<' 8>'<' E8 :' 8 ' 88H011' ?;' 8=H9 ?; 9; A;9' @<99;:' ?;% ' %A;9' E% ?8G ' @; 98=<' < <$? ;=9#' < 8=B'<' $ 8E:' E?%$?' ?<:' F;;=' >8 ;:' FC' <$$%:;=' <=:' E<9 :; <%=;:' %=' ?;' 9< ;' @ %98=' FC' >8 $;' 8 ' @ ;IG:%$;' ;$ G9:' ><=< %$9' ?<A;' >;E' %:;<9 8 ' 9;= ;=9 8' $8 G=%$< ;0 <' 9@;$%<' %$;=$;' 8>' ?;' <FF8 ' ;BG <;:' ?;' % ;' <=:' :G < %8=' 8>' ?;% ' >? % %< ' A%9% 90 <=:' < ' ?;% ' 9% ;=' ;< 9 ' ?;C' E; ;' ;=A; 8@;:' %=' ?<% ' $8E 9 ' %=<$$;99%F ;' <=:' < 89 ' %=A%9%F ;' >/' ;<$?' 8 8; 1T' G:C' %9 ?;' ' ;98G $;' 8>'98 % G:;0 FG ' ;:G$< %8=' ?<:' =8 ' @ ;@< ;:' <=:' JG< %N >%;:' >8 ' <=C' %F; < ' 9 G:%;9 ?;' ;$?<=%$9 <=:' @;<9<= 9 ' E?8' >% ;:' ?;' 8=<9 %$' $8 G=% %;9 ?;C' %B? ' E8 H0 FG ' ?;' <=% C 8>'9@% % G< ' @; >;$ %8=' E<9 ; @ ;:' 8' :%9:<%=' ?;' ;M; $%9;' 8>' <=G< ' <F8G ' <=:' ?;' %=:G9 C' G9 ' F;' ><% ' <=:' <=BG%:' E?%$?' %9 =8 ' ;M$% ;:' FC' ?;' 9;=9;' 8>'@; 98=<' %= ; ;9 $$8 :%=B' 8' ?;% ' >< ?' <=:' L;< ' ?;C' %B? ' ; @ 8C' ?;' :<C ###E ' E?%$?' ?;C' @<99;:' %=' ?;% ' ; 9' ;% ?;' %=' A8$< ' 8 ' ;= ' ' @ <C;0 ?;C' <99; F;:' %=' ?;' ;A;=%=B' <=:' ?;C' E; ;' <E<HN ;=;:' %=' ?;' =%B? ' >8 ' ?;' @GF %$' E8 9?%@' 8>' ?;' 8=<9 ; C ?;' @ ;$%9;' 8 ;= ' E<9' :; ; %=;:' FC' ?;' 9 < 9' E?%$?' < ;' 9; :8 ' $ 8G:;:' %=' ?;' 9; ;=;' 9HC' 8>' BC@ 0 <=:' <' G9 %$' ?8 ' 8 ' G @;' ?;' %B=<' 8>' :;C8 %8=' E%$;' %= ; %@ ;:' ?;' A<9 ' 9% ;=$;' 8>' ?;' :;9; T# A;=' 9 ;;@' ?;' <9 ' ;>GB;' 8>' ?;' G=07' ?<@@C' E<9' %B8 8G9 C' ;<9G ;:0 ?;' A<$<=' ?8G 9' 8>' ?;' 8=H' ?;<A% C' 8 ;:' < 8=B' E% ?8G ' FG9%=;99' 8 ' @ ;<9G ;0 <=:' F;>8 ;' ?;' $ 89;' 8>' ;<$?' :<C' ?;' ?<:' ;@;< ;: C' <$$G9;:' ?;' ;:%8G9' @ 8B ;99' 8>' ?;' G=T1^ =' ?%9' $8 >8 ;99' 9 < ;' 9G@; 9 % %8=' 9 % ' @G 9G;:' <=:' ' 8 ;= ;:' ?; ' 0E ; $?;:' A8 < %;9 T1' ?;' @;0

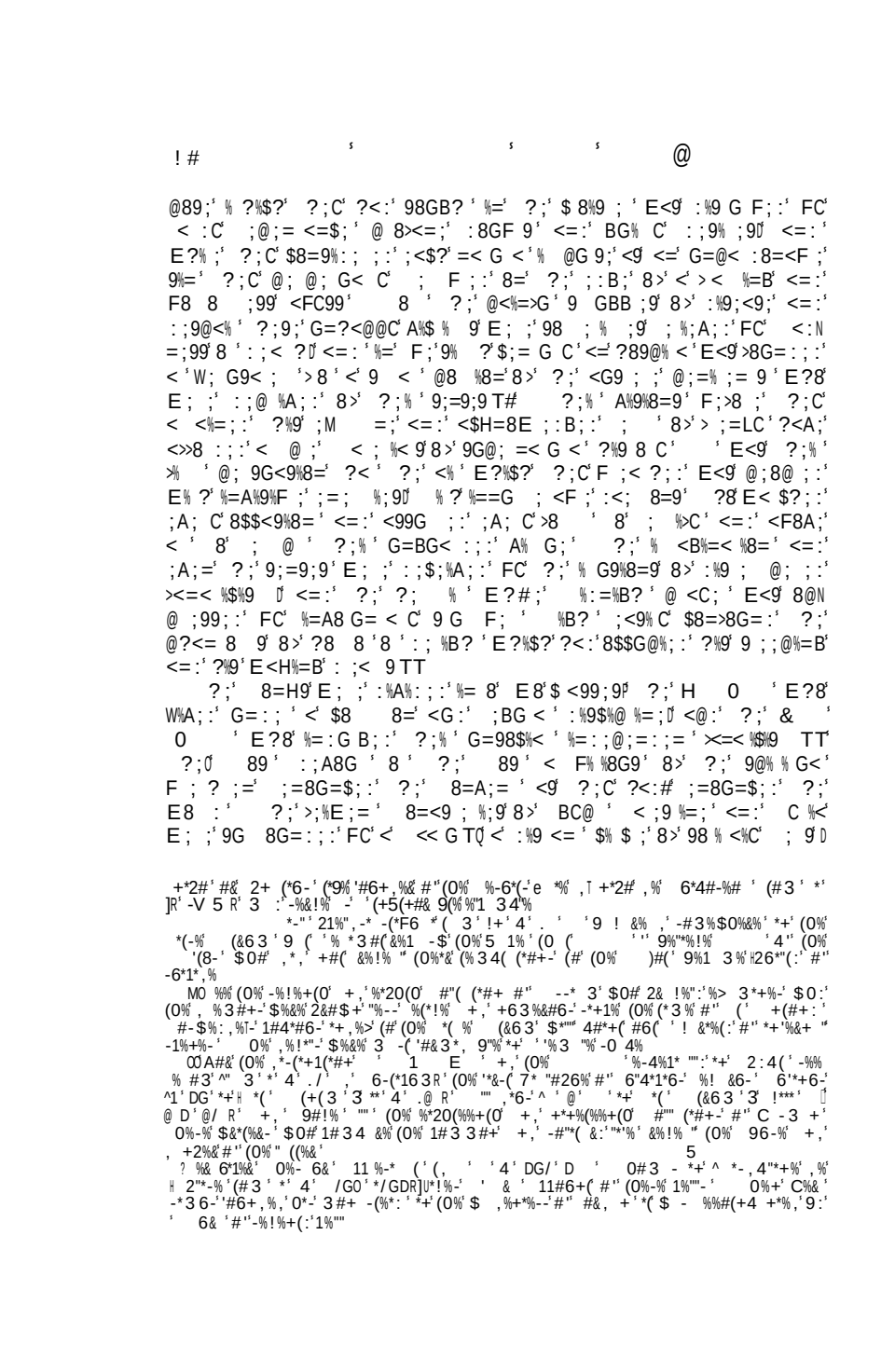
#&' +' 2:4(+' 3#+8' "'#$%,' 9*-'-*-(%&'(#'-%% 3J (Q"(0%'-06(9*-'%:%-' ,6&*+2' (0% $0#"% !*-*(' %% *(' (&6 3 ' 3' *** ' 4 ' /G.' +:' **10' %> 34"%-' 3*20(9% ,,%,

0% @(0' (0' D (0' <G(0' < -(' <.(0' /@(9 ,#(0' "V' +,' /(0' &(*1"%-' #''(0% 6"% #" 10#3*6-' *34#-% #-(*+(#"%& 9"% '#''-*"%41% +,' 3#&(*'*1 (*#+' ?

0%' ,*6&+ '" +,'+#1(6&+ '" 4& :%&-' #''(0% 3#+8-' &% 1#4*#6-(:',*-%+--%,' 9:' --* +' *+' (0% (0*&,' +,''#6&(0 9##8-'#''0*-' +-(*(6(*#+-T +,'0% 1#+-(+("::' 4&%'%&-' (0% '*(6&2:' $0*10' +' +2%" 0 ,' ,*1((%,'(#' (0% 3#+ -(%&*%-'#'' 9%++'*

--* +' '&# 3' 0*-' *!+' %>4%&*%+1% ' ,%-1&*9%-' (0% '#&'*-(%--+%--' #'' 3*+,' +,'9#,:' (# $0*10' ' 3#+8' $ -' %>4#-5' $9 +' 0% -*20%,T(#' '*+,' 0*3-%"' "#+%' 34*6-F6% %2&%,*(6&%(*+2&%,"(6&% 1%"" *((' %(#"#+' !%'6(,' 4%1 -$+' (&,*6-' $0I' 4%& +(%3' 1&%9&*6-' *+(6%(6& ^ +-(*(6(' >' (R

S0 0% (%34((*#+-' +,' -6''%&*+2-' #'' (2*&*6-' $%*:' %#3(##+*% (%,' (0 (6+'#&(6+ (% :#6(0' (#'0*-''&*%+,' (' 0&:-#-(#3 ' %% *,,'%(#+T-' #&8-' #'' *' 4 ' G@ G' #3%(0*+2'-*3*" &'*+(&#,61%-'(0%'"*'% #'' %! :'- **=' 0 0,' (0% ' 3#6-



<=:ſ ?;ſ ;M <A<B<=ſ @;=<=$;ſ 8>ſ ?;ſ ; % 9ſ E<9ſ 9 % G< ; :ſ FCſ
<@@ <G9;ſ <=:ſ ; G< %8= 1Tſ ?;Cſ 9G=Hſ G=:;ſ ?;ſ @<%=>Gſ E;%B?ſ
8>ſ$ 899;9ſ <=:ſ $?<%=9ſ D <=:ſ ?;%ſ ; <$%< ;:ſ % F9ſ E; ;ſ $8=>%=;:ſ
FCſ $8 < 9ſ F <$; ; 9ſ B<G= ; 9ſ <=:ſ B ;<A;9ſ 8>ſ <99Cſ <=:ſ %B%:ſ
% 8=ſ ſ 9G@; >G8G9ſ%=$G F <=$;ſ 8>ſ: ;99ſ ?;Cſ$8= ; @ G8G9 Cſ
$<9ſ<E<Cſ D <=:ſ 98 ;ſ 9<A<B;9<%= 9ſ8>ſ F8 ?ſ 9;M;9ſ ?<A;ſF; =ſ<:N
% ;:ſ E?89;ſ =<H;:ſ F8:%;9ſ E; ;ſ 8= Cſ $8A; ;:ſ FCſ ?;Hſ 8=Bſ
?<% ſ ?;Cſ<9@% ;:ſ 8ſ ;:G$;ſ ?; 9; A;9ſ 8ſ ?;ſ G:;ſ<=:ſ %9; D ',
<F ;ſ 9 < ;ſ %=ſ E?%$?ſ ?;ſ ?G <=ſ F G ;ſ %9ſ 9$< $; Cſ :%9 %=BG%9?;:ſ
<F8A;ſ?%9ſ H%=: ;:ſ<=% <9ſ D <=:ſ <ſ=G ; 8G9ſ9;$ſ 8>ſ =<;>%8 ;9ſ
:; %A;:ſ ?;%ſ=< ;ſ>8 ſ ?;%ſ?G F ;ſ @ <$ %$;ſ8>ſB<L%=Bſ%Fſ ?;ſ
>%; :9ſ ' ;98@8 < %ſ E% ?ſ ?;ſ $8 8=ſ?; :11ſ ?;Cſ 8> ;=ſ
G9G @;:ſ ?;ſ :;=ſ 8>ſ98 ;ſ E%:ſ F;<9ſE?8 ſ ?;Cſ<>>;$;:ſ 8ſ ;N
9; F;ſ D ?;Cſ FG %;:ſ ?; 9; A;9ſ%=ſ 98 ;ſB 88 Cſ $<A; =ſE?%$?ſ
< ſ 8ſ =< G ;ſ ?<:ſ 9$88@;:ſ 8G ſ 8>ſ ?;ſ 8$HD <=:ſ ?;ſ > F ;ſ
JG< %;9ſ 8>ſ ?;F<%9ſ < ;ſ 9 % ſ O%=9$ %F;:ſ E% ?ſ ?;ſ 8=G ;= 9ſ8>ſ
?;%ſ @;=<=$; fſ ?;ſ 89ſ @; >;$ſ ?; % 9ſ < ;ſ 9G@@89;:ſ 8ſ
?<A;ſ @<99;:ſ <=Cſ :<C9ſ E% ?8G ſ >88:ſ <=Cſ =%B? 9ſ E% ?8G ſ
9;;@ſ<=:ſ <=Cſ C;< 9ſ E% ?8G ſ 9@;<H%=BD <=:D B 8 %8G9ſ $ ſ ?;ſ
ſ R ſ <FG9;ſ ?< ſ=< ;S E?8ſ $8= %A;:ſ 9 Cſ $; ſ8ſ9;<P ſ8>ſ<ſ
@;$G %<ſ $8=9 G$ %8=ſE?%$?ſ %B? ſ ;M@89;ſ?% ſ%=ſ ?;ſ 89ſ%=N
$8=A;=%;=ſ@89 G ;ſ 8ſ ?;ſ%=$; ;=$Cſ 8>ſ ?;ſ9;<98=9
8=Bſ ?;9;ſ?; 8;9ſ8>ſ ?;ſ 8=<9 %$ %>;ſ ?;ſ=< ;ſ<=:ſB;=%G9ſ
8>ſ % ;8=ſ C % ;91ſ?<A;ſF;;=ſ % 8 <%L;:ſ FCſ ?;ſ 9 BG<ſ<ſ 9(=ſ
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C8G=Bſ C %<=ſ:;9; ;:ſ ?;ſ@ 8>;99%8=ſ 8>ſ<ſ9?;@?;:ſ<=:ſ ? ;Eſ
?% 9;>ſ%= 8ſ<=ſ<G9 ;ſ 8=<9;Cſ > ;ſ<ſ 8=B=:ſ<=:ſ @<%=>G ſ
=8A% %<;ſ %=ſ E?%$?ſ % ;8=ſ E<9ſ ;@;< ;:Cſ 9<A;:ſ>8 ſ @%8G9ſ
9G%$%:;ſ?;ſ;9 <F %9?;:ſ?%9ſ ;9%:;=$;ſ8=ſ<ſ 8G= <%=ſ<F8G ſ ?% Cſ
8ſ>8 Cſ %;9ſ 8ſ ?;ſ;<9ſ8>ſ = %8$?ſ % ?%=ſ ?;ſ9@<$;ſ8>ſ<ſ
ſ8ſ $% $;ſ 8>ſ98=;9ſ 8ſ E?%$?ſ?;ſ ?<:ſ < <$?;:ſ ?% 9;>ſ
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":(%ſ7%",* :%ſ %-ſ (:"*(%-ſ / b

$;99%A; C <%9;: > % ? ;? ;%B? = =%=$I 8 ?< 8> 9%M C >;; ? ;? B 8G=: #01 =? ?%9 <9 <=:8> C 9 <%8= ?;? C %<= =<$?8 ; ;9%9 ;: F;?;<8> ?% C 9G ; 9 <=:? ;? $8 :8> <9 <=C E%= ; 9 <F% <=:; M; $%9;%=9 G$;:? % 8 <%=N <%=? ?%9 :<=B; 8G9 9% < %8= E% ?8G >;< 8 B%: :%=;99 <=:9G$N $;99%A; C 8 <99G ;? ?;: %>>; ;= @89 G ;9 8>: ;A8 %8= ;? 98 ; % ;9 @ <C;:% =<= ; ;$ < % G:; E% ?? ?%9 8G 9 ; $?;: < 9 ? ;>%BG ;8><$ 899 FG ?%9 89 >< %%< @ <$ %$;E<9 ?<8>F;=:%=B ?%9 ;<B ;9H; ;8=>8 ?;:>8 ;?;<: 8 ?;> ; ;>I <=:<$G %8G9 9@;$ <8 <> ; =G F; %=B E; A;?G=: ;: <=:>8 C0>8G ;@; %%8=9 <; =B ?: ;9%9 ;:>8 ?;; =: ;99 <$$8G= ?;@ 8B ;99 8><=$ G$; ?%? ?%9 ?%B? %B? 9?8 ;= FG %8G :=8:%9 G F ?%9 %>;I <=:? ;@< %;= ; % ;M@% ;: E% ?8G :;9$;=:%=B>8 ?%9 $8 G =I @ %=$;E?8 9?8G :;<@ %;H 9 C%=> %$ 9G$?8 G ;9E8G :F;:;; ;:<C <=I FG % E8G :9G @<99 ?;@8E; 8><I <= 8 ?;>8 ;?;<8=B <=:%9; <F ;; M%9 ;=$;8=? ; G$ <= A%$ % 9 8><?%9$ G; C ?%9 8G=<C <C :8 G9?<A;B <:G< C ;9 8C;:? ;? 9;=9%F% C F8 ?8><? ;% =:<=:F8:C I =8 $<=% F;@ ;9G %A; C <>;$ %8=>8 ?; 9; A;9<;9G9$;@ %F ;8><=C <; @; ?<=<$9 ?8 8 ;=? ; 9; A;9<;9G9$;@ %F ;8><=C %A; C <>;$ %8=>8 ?;<9 8><=H%=: $ G; G=>;; %=B ; @; ?<9 :%9 %=BG%9?;:? ;8=H9B>;A; C <B;<=:$8G= C ?;% 9 ; =% =:%>>; ;=$; E?%$?%9 9; :8 8 %%;:FC @; 98=<> %;=:9?%@ %9 %=><; :FC ; %B%8G9?<; :I <=:?;% ; $% ;99 L;<?<9 9 ;=G8G9 C<: %=%9 ; ;: ?;?8 C8>%$;8><?;=JG%9%N %8=

=?#8 ?;8=<9 %$ 9<%=9 E?8 ;M$%;8= C ?;I$8= ; @ <=:@% C 8><@?% 898@?; 0E; ;9@;$;:<=:< 89 <:8 ;:FC ?;@ %=$;<=:@;8@ ; G$$;99%A;$ 80eC:9 8>@% B % 9 >8 6<G <=:=:%<9< G ;:?;:%A%=;@% <8 >% ;8=I ?;%F;9 8> <$;=9 :%9@G ;:%=<9 ;8 >;G C $8=>;99;:?%9 9G@; =<G <A% G;I <=:?;<=B;%$; % E<9 $8=9G ;:FC ?;C8G=B; ?;8:89%G9 %=?;89 % @8 <=$8=$;=9 8>?;$?G $?<=:9 <;%9 ; <%=9 E;<=9@8 ;:>8 ?;8G= <%=8> ;;=%99<FC <98 ;=@ 8$;99%8=8>?;@<%1I<$?;?;<9 ;0

D * + &&#$'1*&%6)'%&%+#%#"($# 169*(-'#&(0&%%'%%(' 0*10 ! 2&*6-'--*2+-''#&(**%'-6+ 3*(#'>0%'1#"63+'*-'*+1#+-*-(%+(' $*(0' &% -#+' $*^0' 1(-' +,'$*(0' (0%&6"%-' &10*(%1(6&%' 0%' 4%#4"%' $0#- $'*(' '&# 3' 9%"#$' 3*20(' 9%' % -*":' ,%K 1%*!%,'

36-(' +#(' 1#+1% '' 4*%1%'#'' +,%+(' -1 +, '' 1#+#%3*+2' (0%'#&*2*+'#'' (0*-6"1%&' (' 0 -' 9%%+' &%4#&(%,' (0 (' (0%' 7%!*(' --63*+2' +' +2%"*1' '#&3 '*+!*(%,' 0*3' (#' -1%+, ' "*8%' "*) 0 ' *+(#' '*%&:' 10 &*#(' 0%'- *+(' (## + -(*":' & *-%,' 0*-' '##(' +,' (+' -%*[%,' (0%' 3#3%+(' #'' *+'"*1(*+2' (0*-' %0 -(* %+(%+(' #+' 0*-' ! +*(:

B;=; <' 8>' ?;' <9 ' 9%M' F%9?8@9 ' E;= C08=;' $8G= 9' 8 ' %FG=;9 '
<=:' 9%M' ?8G9<=:' 98 :%; 9' D <=:' = %8$?' ;A; ;:' ?%9' F8=;9 ' <9' ?; '
B 8 %8G9' 8 =<=<;=' <=:' % @ ;B=<F ;' :;>;=$; ' ?;' >< ;08>' ?;'
<@89 ;9' <=:' < C 9' E<9' B <:G< C' ;$ %@9;:' FC' ?; ;' ;$$@ ' :('
@8@G <' =<$?8 ; 9' D ?;' ? %9 %<=' E8 :' >; ' @ 89 < ;' F;>8 ;'
?;%' 9? %=;9' D <=:' ?;' % <$;9' <9$ %F;:' 8' ;% ' ;%;9' ; D ;.:;'
<' ;<9 '%='=G F; '<=:':G < %8=' ?;'9@% % G<';M@ 8% 9'8>' ?;?' %A;9
G' ?;' B8 :;=' ;B;=:' 8>' ?;% ' %A;9' E<9' ; F; %9?;:' FC' ?;'
< >G'$;:G % C' >' ?;% '%= ; ;9 ;:' F ; ? ;=D<=:'<' F; %;A%=B'<B;'
E<9' ;<9% C' @; 9G<:;:' ?< ' ?;' 9 %B? ;9 ' $<@ %$;' 8>'<=' #@ %<='
8 '<' C %<=' 8=H' ?<:' F;;='9G>>%$%;= ' 8'%= ; G@' ?;'; ; =<' < '
8>' ?;' G=%A; 9;' ?;'><A8G % ;9' 8>' ;<A;=' E; ;'<$$G9 8 ;:' 8'
$G ;' %=A; ; < ;' :%9;<9;9' % ?' <' 8G$?' <' E8 :' 8 ' <' :%9 <='
;99<B;' D <=:' 8' ;M@;' ?;' 89 ' 8F9 %=< ;' :<; 8=9' > 8 ' ?;'
98G 9' 8 ' F8:%;9' E?%$?' ?;C'@899;99;:' ?;C'>< %%< C'<$$89 ;:'
8 '% @; %8G9 C' $8 <=:;:' ?;' %8=9'<=:' 9; @;=9' 8>' ?;' :;9; D
%=>G9;:' A;B; < %8=' %= 8' <' 9<@ ;99' G=H' D 9G9@;=:;:' % 8=' 8 ' ?;'
9G ><$;' 8>' ?;' E< ; D @<99;:' ?;' % ;' 8=' ?;' F<$H' 8>'<' $ 8$8:%;'
<=:' ;> ;9?;:' ?; 9; A;9' %=' <' >%; C'>G =<$;' ?;9;' ;M <A<B<=' 8_ %<8='
< ;9' E?%$?' :%9@ <C' ?;' >%$ %8=' E% ?8G' ?;' B;=%G9' 8>' @8; C 1 111'
?<A;' 9; %8G9 C' <>>;$;:' ?;' ;<98=' ?;' ><% ?' <=:' ?;' 8 <9' 8>'
?;' ? %9 %<=9' ?;% ' $;:G % C' ;F<9;:'<=:' A% %< ;:' ?;' ><$G N
%;9' 8>' ?;' %=:D ?;C' $8 G@ ;:' ?;' ;A%:;=$;' ?%9 8 CD' <=:'
9G@; 9 % %8=' B <:G< C' ;M %=BG%9?;:' ?;'?89 % ;' %B? '8>'@?% 898@?C'
<=:'9$%;=$;' A; C' 8:;' 8>' ;%B%8G9' E8 9?%@' E?%$?' ?<:' F;;='
@ <$ %9;:' FC' ?;'9<%= 9' ;A; C' C9 ; %8G9':8$ %=;' E?%$?' ?;C' F;N
%;A;:' E<9' >8 %>;:' FC' ?;'9<=$ %8=' 8>' :%A%=;' ;A; < %8=' <=:'< '
?;' <= C' A% G;9' E; ;' 8@@ ;99;:' FC' ?;'9; A% ;' <=:' @ % 8%D'
8G9' ;%B=' 8>' ?;' 8=H9' >' % ' F;' @899%F ;' 8' ;<9G ;' ?;'
%= ; A<' F; E;;=' ?;' @?% 898@?%$' E % %=B9' 8>' %$; 8' <=:' ?;'
9<$;:' ;B;=:' 8>' ?;8:8 ; ' F; E;;=' ?;' $?< <$;' 8>' < 8' <=:'
?<' 8>' % ;8=' E;' <C' <@@ ;$%< ;' ?;' ; 8 <F ;' ;A8 G H '
E?%$?' E<9' <$$8 @ %9?;:'%=' ?;' 8 <=' ; %/;'E% ?%=' <';@; %8:'8 >'
>%A;' ?G=: ;:'C;< 9
' ?;' @ 8B ;99' 8>' ? %9 %<=% C' ?<9' F;;=' < H;:' FC' E8'
B 8 %8G9' <=:' ;$%9%A;' A%$ 8 %;9' 8A; ' ?;' ;< =$:' <=:' GMG %8G9'
$% %L;=9' 8>' ?;' 8 <=' ; @% ;' D <=:' 8A; ' ?;' E< %H;' < F< %<=9

+' '8+#$' +#(' 0#$' (#-%'%1('#&' -4%1*':'(0%' 3*& 1'%-'1#+(*+%,'*+'(0% .X I ! '
#'' #-$%:,%' -' (0%' +6 3 9%&' !%&:' 3 610' %>1%%,-' (0%' (0%#6- +,' 4 2%-' #'' (0 (
!#"6 3*+#6-' $#&8' +'%'%2 +(' -4%1*3%+' 3 :'9%'#6+,'*+' (0%' 7* "#26%-' 4'' 6"4*1*6-'
%!%&6-' +,'0*-'"*'%'#'' (' %'&%!%&%-'(0%' 3#+8-'#'' 2< V(' * :%('0%'*+ 6 (-'
(0%3' $*(0' (0%' &%3 &8' (0 (' +%!%&' & *-%,' (0%' ,% ,J $O%&% -' (0%' 9*-0# ' '
#6&-' 0 ,' &%-(#&%,' ' ,% ,' 3%+' (#' "*'%

8> $C ?%< <=: 6; <=C ?8 9GFA; ;: ?; ; @% ; <=: ; N
F <$;: ?; ; #8= 8> ?; c8 <=< ?; 68 ?9 E; ; ?; >8 ;N
89 8> ?;9;9<A<B; @ 89; C ;9 <=: ?; =< %8= E<9 %=:;F ;:
>8 % 9 $8=A; 9%8= 8 < $8G= C <= 8 < ;<9 8 < 9GFI;$
E8 ?C 8 F; <=H;: < 8=B ?; %=A;= 8 9 8> G9;>G < 9 E?8
?<A;:;9; A;: ?; ; ; F <=$;<=: B < % G:; 8>@89 ; % C
B ;< =G F; 8> 8 <= @ 8A%=$%< 9 ?<: F;;= ;: <E<C %= 8
=<@ %A% C FC ?; 68 ?%$ F<=:9 E?8 <A<B;: 9%< %= ?; % ;8>
6< %;=G9 <=: 8> ?;9; $<@ %A;9 <=C E; ; ?%9 %<=9 <=:
9;A; < F; 8=B;: 8 ?; ;$$;9%<9 %$< 8 :; ?89; %=A8 G= < C
%99%8=< %;9 :%9@; 9;: <9 9 <A;9 %= ?; A% <B;9 8> < %< 9G$N
$;99%A; C <F8G ;: >8 ?; 9< A< %8= 8> ?;% <9 9 ?; 9;:;9
E?%$? ?;C @ <= ;: 8> ?; ;A<=B; %$:8$ %=; E; ;B <:G< C
@ 8@<B< ;: <=: F;>8 ; ?; ;=: > < $;=G C ?; @%8G9 E8 H
E<9 <$?%;A;: FC ?; <F8G 9 8> @?% <9 E?89; <=$;9 8 9 ?<:
F;;= <=9@8 # F;C8=: ?; <=GF; > 8 < 9 < 8E= 8>
<@@<:8$%<

@% ; @?% <9 ?; F%9?8@ <=: <@89 ; 8> ?; 68 ?9 %T<$JG% ;: ?;%
?; 8?9 8A; <=: ;A; ;=$; FC ?%9 F< ; ;99 %>;: <=: %=:;>< %B<F ; L;<
<=: ?;C ;$;%A;: E% ? % @ %$% $8=>%:;=$; ?; :8$ %=;9 8>
G ? <=: A% G; E?%$? ?;@ ;<$?;: <=: @ <$ %9;: ; ;M;$G ;:
?; < :G8G9 <9H 8> <=9 < %=B ?; $ %@ G ;9 %= 8 ?;% =< %A;
8=BG; < :%< ;$ 8> ?; 6; <= 8 ;G 8=%$ <=BG<B; FG ?;
@ G:;= C 9G@@ ;99;: ?; >8G F88H9 8> c%=B9 <9 ?;C %B?
;=: 8 % %< ; ?; >%;%1V1 <=: 9<=BG%=< C 9@% % 8> ?; 9
F< %<=9 ?; G:; % @; >;$ %:8 8> 98 :%; 9 <=: 9?;@?; :9
98 % 0JG< %>%;: 8 $8 G=%$< ; <=C 9@% G< %:;<9 E<9 % @ 8A;:
<=: 8:G< ;: FC ?%9 B;=%G9 <=: @?% <9 F;>8 ; ?; $8G :
>< ; %%9 A; 9%8= E<9 8F %B;: 8 $8 @89; < = E <@?<F; 8>
] E;=C0>8G ; ; 9 >8G 8> E?%$? ?; %=A;=;: 8 ;M@ ;99 ?;
@;$G %< 8G=:9 ?< E; ; G=H=8E= 8 ?; 6 ;;H <=: < %=
@ 8=G=$%< %8= T G ?; @ 89@; 8G9 9 < ; 8> ?; 68 ?%$ $?G $?

+ (0% -69)%1(" "4O*" - $a (0% 1#+!%&-*#+ # " % C#(0- #[#3%+ a
!* 1 <@ #1& (%- *!J 1 << 0%#,#&%(3 *! 1 <@ 0*"#-(#&2 0 ** 1 /
0% 0%&%-: # " 0*" (#&2*6- 44% &-(# 0 !% 2*!%+ 0*3 -64%&*#& 3% +- # "*+'#&3 0
(*4+ 0%+#(*1%- "51& (%- +, #[#3%+ 0 !% 9%1 -0#$+ *(0 3(a10 4&#9 K
9*"*(: (# 9% ,%&*!%, %+(*&%": '&#3 **"# (#&2*6-J %%4 \6%"8 6+(%& 106+2%+
4 .g b
3 6(*" (%, 1 5: # (0% '#6& 2J#-4%"- * (0% C#(0*1 !%&-*#+ $ - 469"*-0%,
'G / +, *- %-(%%3%, (0% 3#-(+1*%+(3#+6 3%+(# " (0% %6(#+*1 " +26 2%
(0#620 %(-(%*+ ((%34(- 9: -#3% '&*:#"# 1#+)%1(6&%- (# ,%4&*!% "4O*" -
(0% 0#+#6& # " (0% $#&8 _ 0% #,%[&2%+(%6- 4&%-%&!%, (4- " (*-
-1&*9%, (# (0% -(0 1%+(6&: _ $# # " (0% '#6& ,,*(*#+ "%((%&- %>4&%--(0% I
#6& #$+ *& %% *3#+ *-(&*(*F6% ,# ''#6!% 6 %-(3%+((#3 ** 4 D0
5< *"" 4&#"%2#3 4 &-* %,*(=6-(%& %(-(%*+ &#"%2#3 (#3 * 4
_ %% 44%+,*>.<

8>;$$;9%<9 %$< < : % %8= ? ; 9 ; 9@% % G< B%> 9 E ; ;@ ;9; A; : %= ?; 6 ; ; H <= : #= %= <=BG<B ; 9 E ?%$?$8=$; < ; ; ?; %=N ;9 % <F ; 8=G ; = 9 8>< =$%; = ; < =%=B ?; % 8 < @ 8N : G$ %8=9 8> %%#% %$; 8 <= : %AC E ?%$?E ; ; <$$; 99%F ; 8 ?; ? %9 %<= $# F< %9%=9 <%= <%= ; : <9% ; = % = ; $8G 9; F ; E ; ; = ?; ; %B= 8> GBG9 G <= : ?; % ; 9 8> 8A%9 <= : ?< ; <B=; ?; ; G < %8= 8> <=H%= : E<9 ; =$8G <B; : FC ?; ; ; F <=$; 8><8 ;@; >; $ 9 < ; D <= : ?; > < ; 8> 9$%; =$; E<9 9; $; C H ; @ < %A; 8 E< <= : ; = %B? ; = ?; < G ; <B; 8> ?; ;9 ; = E 8 %: = ?; 89 $8 G@ 9 < ; 8> ? %9 %<=% CD ?; < F< %<=9 %B? ; < = IG9 %$; > 8 ?; <E <= : ; $C > 8 ?; B89@; D <= : %> ?; H=8E ; : B; 8> ?; % : G C E<9 %=9G>%$%; = 8 BG%: ; ?; % <$ %8=9 8 8 ; BG < ; ?; % @<99%8=9 ?; C E ; ; 98 ; % ;9 ;9 <%=; : FC $8=9$%; =$; <= : > ; JG ; = C @G=%9?; : FC ; 8 9; G ?; : % ; $ <G ?8 % C 8> ; %B%8= E<9 ;99 ; >>; $ G< ?<= ?; ?8 C $8 G=%8= E ?%$?G=% ; : ?; E% ?? ; % ? %9 %<= F ; ? ; = %= 9@% % G< > %; = : 9?%@ ?; %=> G ; =$; 8> ?; 9; 9; = % ; = 9 $8=N %FG ; : 8 9; $G ; ?; % >%: ; % C %= ?; 9; A%$; 8 ?; < %<=$; 8> ?; 8 <=9 8 < ; A%< ; ?; ?8 8 9 8> E< 8 8 : ; < ; ?; %=9V#=$; 8> $8=JG ; 9 <%% : 8 @ ; 9; A; %= ?; : 8E=>< 8> ?; ; @% ; < @; <=; = ; 9@; $ >8 ?; =< ; <=: %=9 % G %8=9 8> 8 ; = ?; : <C9 8> <B<=%9 ?; @ %; 9 9 8> 6 <G <=: 6 ; N <=C ; %B=; : 8A; ?; @; 8@ ; <=: $8= 8 ; : ?; IG %9 : %$ %8=8> ?; <B%9 < ; 9D <=: ?; L ; < 8G9 @ 89; C ; 9 <=9>; ; <= ; JG< 8 8 ; < @ ; ; <9G ; 8> : ; A8G 8F ; : %; =$; 8 ?; @8= %>9 8> ?; ? %9 %<= >< % ? ?T 9<$; : $?< <$; 8> ?; F%9?8@9 E<9 G@@8 ; : FC ?; % ; @8 < @899; 99%8=9 D ?; C 8F <%=; : <= ?8=8G <F ; 9; < %= ; B%9 < %A; <99; F %; 9 8> 98 : %; 9 <=:] ; ; ; =D <=: % E<9 ?; % %= ; ; 9 <9 E ; <9 %; % ; : G C 8 , 8 %>C FC @ ; <$; >%I $8G=9; 9 %%; >%; $; 9@% % 8> ?; < F< %<=9 ?; @; @; G< 0$8 ;9@8=: ; =; ; 8> ?; < %= $; BC ?; > ; JG ; = @% #% <B; 9 8 8 ; <=: W; G9< ; <=: ?; B c # = B <G ?8 % C 8> ?; 8@; 9 $; ; = ; ; ?; G=%8= 8> ?; ? %9 %<= ;@GF %$ D <=: <: G< C @ 8 : G$; : ?; 9% % < <==; 9 <=: $8 8= IG %9@ G ; =$; E ?%$?<A; : %9 %=BG%9?; : > 8 ?; ;9 8> <=H%=: ; ?; %=: ; @; = : ; = <=: ; A; =?89 % ; =< %8=9 8> 8: ; % G 8@; G ?; 8@; < %8= 8> ?; 9; $<G9; 9 E<9 $?; $H ; : <=: ; < : ; : FC ?; G=>8 G=< ; <$%: ; = E ?%$?%=>G9; : <; <: C @8%98= %= 8 ?; $G@ 8> < A 8= ?< ; A; %B? F; ?; ; < C 9; = % ; = 9 8> @?% <9 ?%9 $8= = ; M%8=9 E% ?? ; ; @% ; <=: ?; $?G $?E ; ; >8 ; : G %=B ?; ; %B= 8> %<=%9 ?; <@89 ; 8> ?; 6 8 ?9 9GF9$ %F ; : ?; $; ; : 8> % %=%D @ 8>; 99; : E% ?> ; ; : 8 <=: @; ?<@9 E% ?9%=$; % C ?< ; ?; . , E<9 =8 ; J # 8 $8=9GF0

:C<A;
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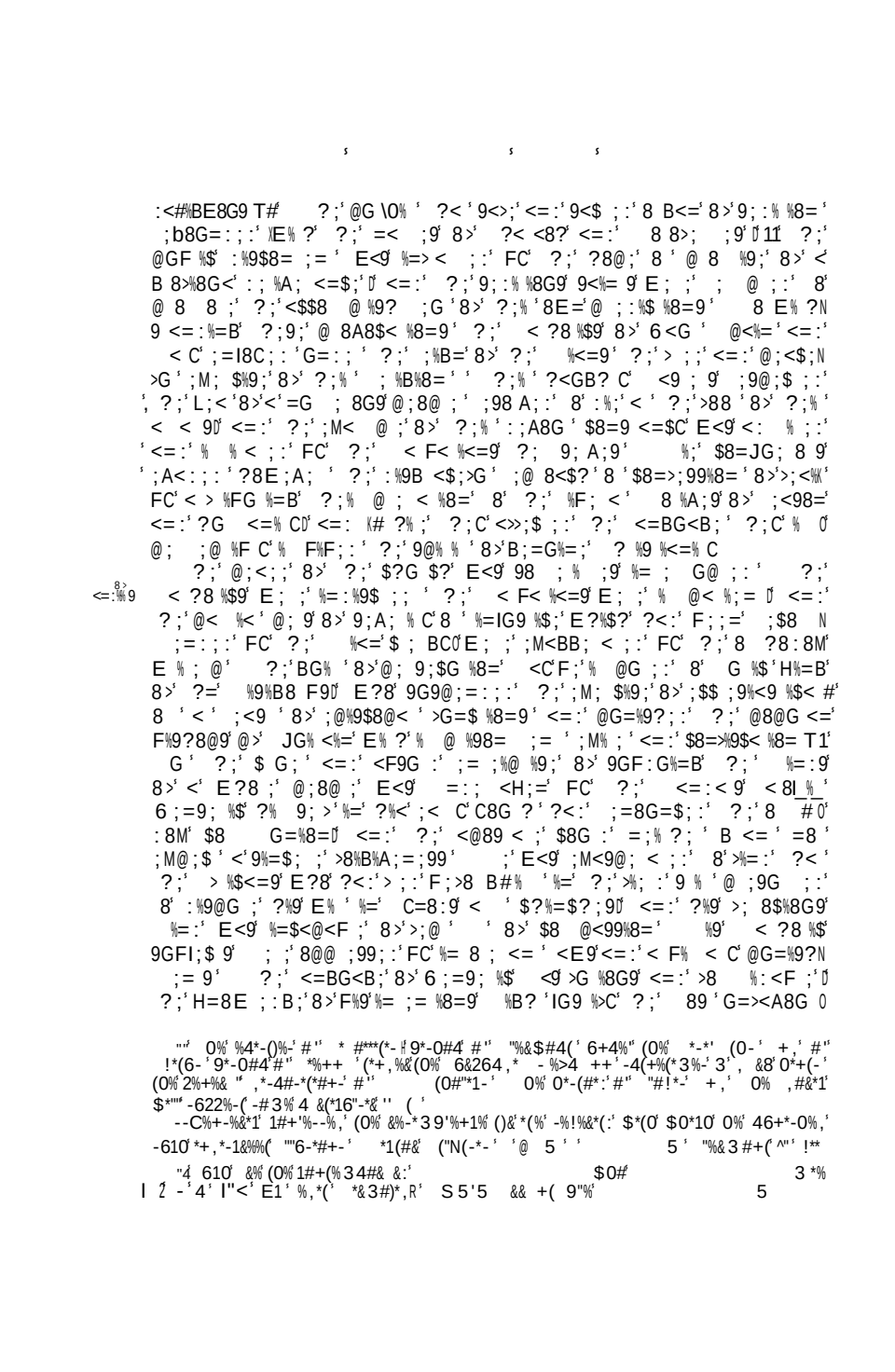

of that virtuous, though feeble, prince. Supported by the cousin [illegible] Arian, but the Vandal monarch, because he could not enjoy or abuse his power, was submissive to the [illegible] of Rome; and the orthodox party retaliated the injuries which they had endured.[92]

The passionate declamation of the Catholics, the sole [illegible] this persecution, cannot afford any distinct series of [illegible] events, any impartial view of characters or counsels; but the most remarkable circumstances, that deserve either credit or notice, may be referred to the following heads: I. In the original law, which is still extant,[93] Hunneric expressly declares, and the declaration appears to be correct, that he had faithfully described the regulations and penalties of the Imperial edicts against the heretical congregations, the clergy, and the people who dissented from the established religion. If the rights of conscience had been understood, the Catholics must have condemned their past conduct, or acquiesced in their actual sufferings. But they still persisted to refuse the indulgence which they claimed. While they trembled under the lash of persecution, they praised the *laudable* severity of Hunneric himself, who burnt or banished great numbers of Manichæans;[94] and they rejected, with horror, the ignominious compromise that the disciples of Arius and of Athanasius should enjoy a reciprocal and similar toleration in the territories of the Romans and of the Vandals.[95] II. The practice of a conference, which the Catholics had so frequently used to insult and punish their [illegible] antagonists, was retorted against themselves.[96] At the

The original monuments of the Vandal persecution are preserved in the [illegible] of the History of Victor Vitensis (de Persecutione Vandalica), a bishop [illegible] by Hunneric; in the Life of St. Fulgentius, who was distinguished [illegible] Thrasimund (in Biblioth. Max. Patrum, tom. ix.); and [illegible] of the Vandalic War, by the impartial Procopius. Dom. Ruinart, the last editor of Victor, has illustrated [illegible] copious and learned apparatus of notes and supplements. [illegible] of Victor in *Mon. Goth. Dict.* has an excellent [illegible] See Gorres, *Zeitschrift für wiss. Theologie*, 1834. [illegible] v. 2, p. 65. Hunneric refuses the name of Catholic to the [illegible] He describes, as the veri Divinæ Majestatis cultores, his own [illegible] this faith, confirmed by more than a thousand bishops, [illegible] Sciencia.

[illegible] 1, p. 21, 22, *Laudabiliter* . . . videbatur . . . [illegible] the passage is unintelligible. See Ruinart, Notes, [illegible] 20, 22, 23. The clergy of Carthage called [illegible] and they seem indeed to have been possessed [illegible] [illegible] of this conference and its consequences [illegible] 42, and the whole fourth book. [illegible] by Victor, [illegible] [illegible]

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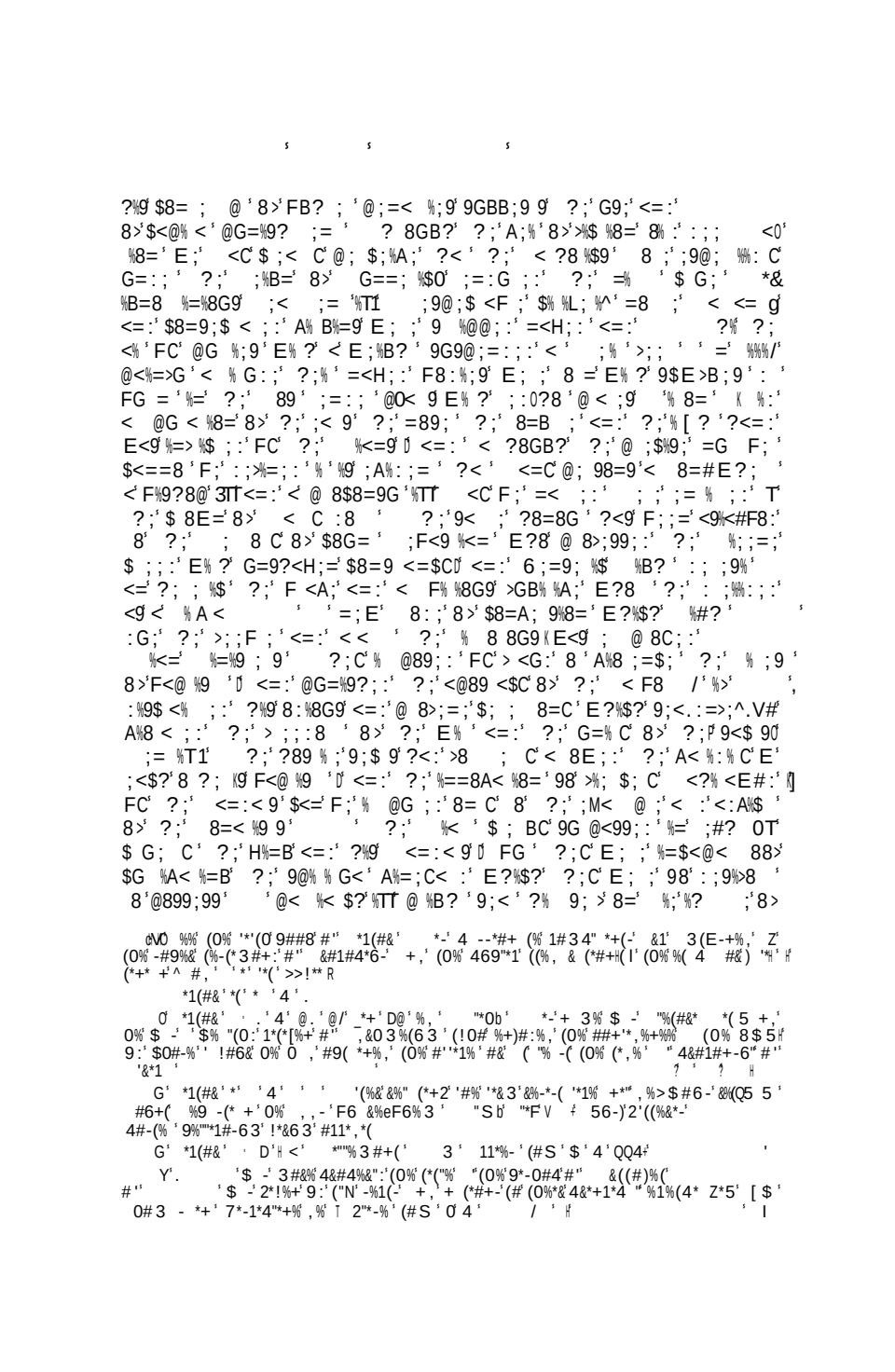

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supernatural gift of the African confessors, who spoke without tongues, will command the assent of those, and of those only, who already believe that their language was pure and orthodox. But the stubborn mind of an infidel is guarded by secret incurable suspicion; and the Arian, or Socinian, who has seriously rejected the doctrine of the Trinity, will not be shaken by the most plausible evidence of an Athanasian miracle.

The ruin of Arianism among the Barbarians. A.D. 500-700

The Vandals and the Ostrogoths persevered in the profession of Arianism till the final ruin of the kingdoms which they had founded in Africa and Italy. The Barbarians of Gaul submitted to the orthodox dominion of the Franks; and Spain was restored to the Catholic church by the voluntary conversion of the Visigoths.

[illegible] salutary revolution[128] was hastened by the example of a [illegible] royal martyr, whom our calmer reason may style an ungrateful [illegible]. Leovigild, the Gothic monarch of Spain, deserved the [illegible] of his enemies, and the love of his subjects: the Catholics [illegible] a free toleration, and his Arian synods attempted, [illegible] much success, to reconcile their scruples by abolishing the unpopular rite of a *second* baptism. His eldest son Hermenegild, who was invested by his father with the royal diadem, and the fair principality of Bætica, contracted an honourable and orthodox alliance with a Merovingian princess, the daughter of Sigibert, king of Austrasia, and of the famous Brunechild. The beauteous Ingundis, who was no more than thirteen years of age, was received, beloved, and persecuted in the Arian court of Toledo; and her religious constancy was alternately assaulted with blandishments and violence by Goisvintha, the Gothic queen, who abused the double claim of maternal authority.[129] Incensed by her resistance, Goisvintha seized the Catholic princess by her long hair, inhumanly dashed her against the ground, kicked her till she was covered with blood, and at last gave orders that she should be stripped, and thrown into a bason, or fish-pond.[130] Love and honour might excite Her-

[128] See the two general historians of Spain, Mariana (Hist. de Rebus Hispaniæ, tom. i. l. v. c. 12-15, p. 182-194) and Ferreras (French translation, tom. ii. p. 206-247). Mariana almost forgets that he is a Jesuit, to assume the style and spirit of a Roman classic. Ferreras, an industrious compiler, reviews his facts and rectifies his chronology.

[129] Goisvintha successively married two kings of the Visigoths: Athanagild, to whom she bore Brunechild, the mother of Ingundis; and Leovigild, whose two sons, Hermenegild and Recared, were the issue of a former marriage.

[130] Iracundiæ furore succensa, adprehensam per comam capitis puellam in terram conlidit, et diu calcibus verberatam, ac sanguine cruentatam, jussit exspoliari, et piscinæ immergi. Greg. Turon. l. v. c. 39, in tom. ii. p. 255. Gregory is one of our best originals for this portion of history.

;=;B% :' 8' ;9;= ' ?%9' %=IG %8G9' ;< ;= ' 8>' ?%9' F %:>;D <=:' ?;' ' E<9B <:G<C' @; 9G<:;:' ?<' =B==:%9' 9G>%; ;:' >8 ' ?;' $<G9;' 8>' :%A%=;' G ?' ; ' ;=:;'$8 @ <%= 9' %:' ?;'E;%B? C'< BG ;= 9' 8>' ;<=:; ' < $?F%9?8@' ->' ;A% ;'<$$8 @ %9?;:' ?%9' $8=A; 9% %'0 <=:' ?;' ?;% '8>' ?;' 6 8 ?%$' 8=< $?C'E<'%=% %< ;:' % ' ?;' %$;=;' >;% ?' FC' ?;' 98 ; =' %B? 9' 8>' $8=>% < %8= #T' ?;' <9?' C8G ?1' ' %=> < ;:' FC' L;< ' <=:' @; ?<@9' FC' < F% %8=1' E<9' ; @ ;:' ;' A%8 < ;' ?;' :G %;9' 8>' < 98=' <=:' <'9GFI;; 0 <=:' ?;' < ?8 %$9' =>' @<%=' < ?8GB?' ?;C' $8G :' =8 ' $8 @ <%=' 8>' @; 9;$G %8=' <@N @ <G:;:' ?%9' @%8G9' ;F; %8=' <B<%=9 ' <=' ?; ; % ' >; ?; ' ?;' $%A% %# < ' E<9' @ 8 <$;:' FC' ?;' 8=B' <=:' 8F9 %=< ;' 9%;B;9' 8>' ; %:<' 8 :8A<' <=:' ;A% ;' E ?%$?' ?<:' 9 ;=G8G9 C' ;9@8G9;:' ?;' @< C'8>' ; ;=;B% :' ;'%=C% ;:' ?;'8 ?G:8M' <%F< % % ' ?;' =; %'<=:' ?;' <=H9' 8' ?;' :;9 G$ %8='8>' ?%9' =< %A;' <=:'D' ?;' 98 %$% ;:' ?;' :<=B; 8G9' <%:' 8>' ?;' 8 <=9' E?8' @899;99;:' > %$<' <=:' <' @< '8>' ?;' @<=%9?' ;$ %9 D' <=:' ?%9' ?8 C' %<99<: ' ?;' < $?F%9?8@' ;<=:; ' ;>>;$ G< C' =;B8 %< ;:' %=' @; 98=' E% ?' ?;' CL<= %=;' $8G ' G ' ?;' ? # ;9' 8>' ?;' < ?#%$9' E; ;' $ G9?;:' FC' ?;' <$ %A;' :%%B;=$;' 8>' <' 8=< $?' E?8' $8 <=:;:' ?;' 88@9' <=:' ;<9G ;9' 8>' @<%=' D' <=:' ?;' BG% C' ; ;=;B% :' <> ;' %9' A<%=' < ; @ 9' 8' ;9%9 ' 8 ' 8' ;9$<@;' E<9' $8 @; ;:' 8' 9G ;=:; ' ?% 9; >'%= 8' ?;' F<=:9' 8>'<=' %=$;=9;:' >< ?; ' ;8A ' B% :' E<9' 9 % ' %=:>G ' 8>' ?< ' 9<$;:' $?< <$; D' <=:' ?;' ;F; 1' :;9@8% ;:' 8>' ?;' ;B< '8 =< ;=9' E<9' 9 % ' @; % ;:' %=' <' :;$;=' ;M% ;' 8' @ 8>;99' ?;' < ?8 %$' ;%B%8=' %9' ;@;< ;:' <=:' G=9G$N $;99>G ' ;<98=9' < ' ;=B ?' @ 8A8H;:' ?;' %=:%B=< %8='8>' ?;' >8 ?%$' H%=B D' <=:' ?;' 9;= ;=$;' 8>' :;< ?' E ?%$?' ?;' @ 8=8G=$;:' % ?' <@@< ;=' ; G$ <=$;' E<9' @ %A< ;C' ;M;$G ;:' %=' ?;' 8E;' ;>' ;A% ;ZT#' ?;' %=> ;M%F ;' $8=9 <=$C' E% ?' E ?%$?' ?;' ;>G9;:' 8' <$$;@' ?;' %< ' $8 G=%8=' <9' ?;' @ %$;' 8>' ?%9' 9<>8 C' <C' ;M$G9;' ?;' ?8=8G 9' ?< ' ?<A;' F;;=' @<%:' 8' ?;' % %; 8 C'8>' ; ;=B%:' %9' E%>;' <=:' %=><=' 98=' E;;' :;<%=;:' FC' ><;' 8 <=9' %=' %B=8 %=%8G9' $<@ %A% CD' <=:' ?%9' :8 ;9 %$' %9>8 G=;' < =%9?;:' ?;' B 8 %;9' 8>' ;8A%B% :' <=:' ; F% ; ;:' ?;' <9' 8 ;=9' 8>' ?%9' %>;

%9' 98=' <=:' 9G$$;998 ' ;$< ;:' ?;' >% 9' < ?8 >;D H%=B' @<%=' ?<:' % F%F;:' ?;' ><% ?' 8>' ?%9' =>8 G=< ;' F 8 ?;

0%' (0#"*1-' $0# . 3*((%,'(0%' 9 4(*-3'#'' O%&%(*1-'&%:% 1%,' (0%'&'('#&' -' *($ -' '(%&$ &,-' -(:'%,' (0%' - 1& 3%)*('#'' 1#+'*&3 (*#+' (#' 0*10' (0%:' -1&*9%,' 3 +:'3:-(*1' +,' 3 &!%""##-'4&%&#2 (*!%-' 9#(0'!*-*9"%' +,'*0!*-* % *-(',%-' %&, 3%+-'(#3'*' 4',#- -(5

'e %&3%+*2*",' $ -' 9%-*%2%,'*+' %!*""%'1 4(F&%,'*+' #',#!5' +,'%>%16(%,'*+' && 2#+ J-%%' #0+'#'' *1" &63'%,' #3+*- +' '%&#+' *+' *'' 4'D @J +,'#+%' -'#'' -*,#&%'*9 '4'D @b

*)

?;' 9G@@8 ;:' E% ?' 8 ;' @ G:;=$;' <=:' 9G$$;99' =9 ;<:' 8>' ;A8 %=B' <B<%=9' ?%9' < ?; ' ;$< ;:' @< %;= C' ;M@;$;:' ?;' ?8G' 8>' ?%9' :;< ?' =9 ;<:' 8>' $8=:; =%=B' ?%9' ; 8 C' ?;' @%8G9 C' 9G@@89;:' ?< ' ?;' :C%=B 8=< $?' ?<:'<FIG ;:' ?;' ; 8 9' 8>' %<=%9 ' <=:' ;$8 ;=:;:' 8' ?%9' 98=' ?;' $8=A; 9%8=' 8>' ?;' 6 8 ?%$' =< %8= ' 8' <$$8 @ %9?' ?< ' 9< G < C' ;=:' ;$< ;:' $8=A;=;:' <=' <99; F C' 8>' ?;' %<=' $; BC' <=:' =8F ;9' :;$ < ;:' ?% 9; >'<' < ?8 %$' <=:';M?8 ;:' ?; ' 8' % % < ;' ?;' ;M< @ ;' 8>' ?;%' @ %=$;' ?;' <F8 %8G9' %= ; @ ; < %8=' 8>' :8GF >G' ;M 9' 8 ' ?;' $G %8G9' @G 9G%' 8>' ; <@?C9%$<' < BG ;= 9' E8G :' ?<A;' ;M$% ;:' <=' ;=: ;99' $8= 8A; 9C0' <=:' ?;' 8=< $?' :%9$;; C' @ 8@89;:' 8' ?%9' % % ; < ;' <G:%;=$;' E8' 9GF9 <= %<' <=:' A%9%F ;' < BG ;= 9' ?;' ;9 % 8=C' 8>' < ?' <=:' 8>' ;<A;=' ?;' # ' 9GF % ;:' 8' ?;' %$;=;'9C=8:' ?;' 8 <=9' ?;' F< %<=9' <=:' ?;' %=?<F% <= 9' 8>' @<%=' G=<=% 8G9 C' @ 8>;99;:' ?;' 9< ;' 8 N ?8:8M'$;;:0' <=:' ?;' %9%B8 ?9' ;9%9 ;:'< 89'< 8=;' ?;'$8=9;=' 8>' ?;' ?%9 %<=' E8 :' ' 9G@; 9 %%8G9' <B;' E<9' @ ;@< ;:' 8' ;A; ;=$;' <9' ?;' ;9 % 8=C' 8>' ' ' ?;' @ ;; =< G < ' $G ;9' E?%$?' E; ;' @; >8 ;:' FC' ?;' 9H% ' 8 ' A% G;' 8>' ?;' < ?8 %$' $; BC0' ?;' F<@ %9 <' >8= 9' 8>' 99; ' %=' 9; %$<1# E?%$?' E; ;' 9@8= <=;8G9 C' ;@ ;=%9?;:' ;<$?' C;< ' 8=' ?;' A%B%' 8>' <9 ; 0' <=:' ?;' % <$G 8G9' 9? %=;' 8>' ' < %=' 8>' 8G 9' E?%$?' ?<:' < ;<:C' $8=A; ;:' ?;' G;A%$' @ %=$;' <=:' @;8@ ;' 8>' 6< %$%< %#9' ?;' < ?8 %$' H%=B' ;=$8G= ; ;:'98 ;' :%>>%$G %;9'8=' ?%9'% @8 <= ' $?<=B;' 8>' ?;' =< %8=<' ; %B%8=' ' $8=9@% <$C'9;$; C'>8 ;= ;:' FC' ?;' VIG;;=0:8E<B; ' E<9' >8 ;:' <B<%=9' ?%9' %>;0' <=:' E8' $8G= 9' ;M$% ;:' <' :<=B; 8G9' ;A8 ' %=' ?;' < F8==;9;' 6<G ' G ' ;$< ;:' :%9< ;:' ?;' $8=9@% < 8 9' :;>;< ;:' ?;' ;F; 9' <=:' ;M;$G ;:' 9;A; ;' IG9 %$;0' E?%$?' ?;' %<=9' %=' ?;%' G =' %B?' F <=:' E% ?' ?;' ;@ 8<$?' 8>' @; 9;$G %8=' %B?' F%9?8@9' E?89;' =< ;9' F; <C' ?;%' < F< %$' 8 %B%=' <FIG ;:' ?;%' ; 8 90' <=:' < ' ?;' F88H9' 8>' %<=' ?;8 8BC' E; ;' ;:G$;:' 8' <9?;9' E% ?' ?;

3&& --%(' #&' 6"* ' #+-(+(* ' $ -' #44#-*(% (# %!*""%' #+' (0% +#&(0%&+' -*,%' #"(0% -%(*-' ^ "*+' *-(' (6& ' ***' <RJ +,' (0% 6(0%+(*1' &%'%&%+1% #"' C&%2#&:' #"' #6&-' ^ *-(' A& &*1#&' 3' !*' 1' .<' 4' D R',%-%&!%-' 3#&% 1&%,*((0 +' (0% + 3%'#"' 6-*(+* '^,%C"#&* ' &(:&' 1' D.R' $0*10' 0 -' 9%%+' % 2%&":' %3 9& 1%,' 9:' (0%' ! *+' +,'-64%&-(*(*#6-' #&(626%-%'^A%&&% -' *-(' ,T -4 2+%'(#3' **' 4' R

3&) 0*-' 3*& 1"%' $ -' -8*"' 6"":' 4%&'#&3%,' +' &* +' 8*+2'-% "%,' (0%' ,##&-' +,'62' ,%%4' (&%+10' *46+,' (0% 106&10' $*(0#6(' 9%*+2' 9"%' (# *+(%&1%4(' (0%' -(%&'-644":' #"'9 4(*-3 "' $ (%&

3&"A%&&%& -' ^(#3' **' 4' @/' ' M&' *""6-(& (%,' (0%' ,*''*16"(*%-' $0*10' &%2 &,' (0%' (****%' +,' 1*&16 3-(+1%-' #"(0%'1#+!%&-*#+' #"(0%' 6%!*' 0%:' 0 ,' 9%%+' &%1%+("::' 6+*(%,' 9:' %#!*2*",' (#' (0%' C#(0*1' 3#+ &10:' #"' 4 *+' _A' C9&&%-' =*&10%' 6+,' (('*3' -4 +*-10%+' 6%!%+&%*10%' *+' Y%*(-10' '' *--' 0%#"#2*%' < ' D# < 4J j.<' L +0

E?8 ;' =< %8=' > 8 ' ?I9' : 8 %=%8=9 <=:' < $8G=$%' 8>' 8 ; : 8'
@GF %9?; :' <' : ;$; ;' ?< ' ;A ; C' 6 8 ?%$' H%=B' 9?8G :' 9E ;< ' G'
<%= <%=' ?%9' 9< G < C' ; : %$ ' G ' ?;' C #>9' E ; ;' G=E% %=B' @'
: %9 %99 ?;' A%$ % 9 E?8 ' ?;C' : ; %B? ; :' 8' 8 G ;' 8 ' 8' : ;N
@ %A;' ?; 9; A;9' 8>' ?;' %=: G9 %8G9 9 <A;9' 8A; ' E?8 ' ?;C'
%B? ' ;M; $%9;' <' G$ < %A;' 8@@ ;99%8=' ?;' W; E 9 9 % ' $8= %=G; :'
%=' @<%=' G=: ; ' ?;' E ;%B? ' 8>' ?;' $%A%' <=:' ;$$;9%<9 %$<' <E9'
E?%$?0%=' ?;' 9< ;' $8G= C' ?<A;' F; ;=' ><% ?>G C' <%%9$ %F; :' %='
?;' 8 : ;' 8>' ?;' =JG%9% %8=' ?;' 6 8 ?%$' H%=B9' <=:' F%9?8@9' < '
;=B ?' : %9$8A; ; :' ?< ' %=IG %;9' 0E%' @ 8 : G$;' ?< ; :' <=:' ?< '
?< ; :' E % ' >%=:' ?;' 8@@8 G=% C' 8>' ;A ;=B; ' ' =< %8=' ?;'
9 ; $; ' 8 ' @ 8>; 99; :' ; =; %; 9' 8>' ? %9 %<=% C' 9 % ' G %@ %; :' %='
9; A% G : ;' <=:' :%9 ;99 <=:' ?;' %= %BG ; 9' 8>' ?;' W; E 9' @ 8 8 ; :'
?;' <@%:' 9G$$; %#' 8>' ?;' <F%<=' $8=JG; 8 9 Z#' ' ' '
9' 88=' <9 ?;' < F< %<=9' E % ?: ; E' ?; % ' @8E ; >G ' 9G@@8 8..%E%. '
?;' G=@8@G < ' ?; ;9C' 8>' %G9' 9G=H' %= 8' $8= ; @ ' <=:' 8F %A%8=
G ' ?;' 6 ; ; H9' 9 % ' ; <%=; :' ?; % '9G? ;' <=:' 8JG<$%8=9' :%9@8N
9% %8=' 0' ?;' ;9 <F %9? ;= ' 8>' <=' 8F9$G ;' :8$ %=;' 9GBB; 9 ; :' = ; E'
JG; 9 %8=9' <=:' = ; E' :%9@G ; 90' <=:' I ' E<9' < E<C9' %=' ?;' @8E ; '8>'
<=' < F% %8G9' @ ; < ; ' 8 ' <' >< =< %$' 8=H ' 8' A%8 < ;' ?;' @ ; <$; ' 8>'#
?;' $?G $?' <=: ' @; ?<@9' 8>' ?;' ; @% ; ' ?;' ?%9 8 %<=' 8>' ?;'
; @% ;' <C' 8A; 88H' ?89;' :%9@G ;9' E ?%$?' E ; ;' $8=>%=; :' 8' ?;'
8F9$G % C' 8>' 9$?88 9' <=:' 9C=8 : 9' ?;' <=%$?<;<=9' E?8' <FGG ; :'
8' ; $8=$% ;' ?;' ; %B%8=9' 8>' ? %9 ' <=:' 8>' ` 8 8<9 ; ' ?<: ' 9 ; $; C'
%= 8 : G$; :' ?; 9; A;9' %= 8' ?;' @ 8A%=$; 9D' FG ' ?; 9; ' >8 ; %B='
9; $ < %; 9' E ; ;' %=A8 A; :' %=' % ;' $8 8=' : %9B <$;' ›' ?;' 6 =89 %$9'
<=:' ?;' @; %<' <E9' E ; ;' ; M; $G ; :' FC' ?;' @GF %$' ?< ; : ' ?;'
< %8=<' 8@%=%8=9' 8>' ?;' ; <B%<=9' E ; ;' @ 8@<B< ; :' > 8>=' % <%='
8' 8 ;' > %$<' <=:' < ;9 %=; ' <=:' 9% ; = C' ; M@% ; :' %=' <' 9G@; N
9 % %8G9' <B; ' G ' ?;' <9 ' <9 :%9 <$; :' FC' ?;' ;9 8 %<=' <=:'
>; G C$?%<=' $8= 8A; 9%; 9D' E ?%$?' < ; @ ; :' 8' ; M@ <%=' ?;' C9#
; C' 8>' ?;' %=$< =< %8=' <=:' ?<9 ; =; :' ?;' G%=' 8>' ? %9 %<F% C'
%=' ?; ' =< %A;' <=: ' ?;9;' $8= 8A; 9%; 9' E ; ;' >% 9' <B% < ; :'
G=: ; ' ?;' ;%B?' 8>' ?;' C8G=B; ' ?; 8 : 89%G9D' ?G ' ?; % ' % @8 <= '
$8=9; JG; =$; 9' ; M ; = :' >< ' F; C8= :' ?;' % % 9' 8>' ?;' @ ; 9; = ' A8 G ;
?;' ; <@?C9%$<' $?<%=' 8>' < BG ;= ' ?;' $V ;9' 9' 8>' ; $$;9%<9 %$<'
< F% %8=' <=:' ?; % '@8 % %$<' ' # G ; = $; '8=' %/ ;' : ; $ %=;' 8>' ;' C9 9=%0'
%=;' ; @% ;' <C' <>%F :' <=' %= ; ;9 %=B' <=:' %=9 ; > ;' 9; %; 9' 8>'
?%9 8 C' > 8 ' ?;' B; =; <' $8G=$% 9' 8>' @?; 9G9' <=:' F< $; : 8=' 8'
?;' $8=JG; 9 ' 8>' ?;' <9 ' FC' ?;' 9G$$; 998 9' # ' <?8 ; '

' + 2% ^(#3 ' !***' 1 ' <' 4 ' < .GGR' '%*(0'6"")&' &%4&%-%+(-' (0%' ((% #'' (0%
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" $-' #'' (0%' *-*2 $*-' 3 +:' % &*#6-' 1*&16 3 -(+1%-' %--% (*(,' *#' *-' -(,*)%1(' (9#*50'
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2*)

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E E ! & / " " ! # 0 K % " DDF G / 0 . ! , ! E L" / 0 -

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(') 3 * E?8% I#< %;= C9G@@8 ;: ?;8 <=0C8H; ;$;%A;: <; 8 <F ; 998=> 8 8=;8>; ?;%;G ;=<= 9@ 8>; ;9@<9%<= E?89;; E;%B? C 9;=9;; ?<9 F;;= ;>%=;:; <=:; ;M@ ;99;:; FC ?; B;=%G9 8>; <$% G9#Q F;@ 8 ;$ %8=; 8>; ?;; ;@GF %$?<9 :;N %A; ;:; 6<G > 8 %= ; =<; :%9$8 :; <=:; >8 ;%B=; %=A<9%8=9; C ?;; 899 8>;=< %8=<; %=:;@;=:;=$; C8G; ?<A;;<$JG% ;:; ?;=< ;; <=:;@ %A% ;B;9 8>; 8 =<=; $% %L;=9; 8G ;=I8C ; %=; $8 8=; E% ?; 8G 9; A;9; ?;;@; <=;=; F;=;>% 9 8>;$%A% ; B8A; = ;= D <=:;C8G ; ; 8 ;; 9% G< %8=; %9 ;99 ;M@89;:; @; ?;; <$$%:;= <; %9$?%;> ; 8>; C <==C ; =9 ;<:; 8>;; M; $%9%=B; ?;; %B? 9; 8>;$8=JG;9 ; E ;; ?<A;; F;;=; $8= ;= ;:; 8; % @89;; 9G$?; %FG ;9; <9 < ;; ;JG%9% ;; >8 ; C8G ; 8E=; @ ;9; A< %8=; #$; $<==8 ; F;; 9;$G ;:; E% ?8G; < %;9D <=:; <; %;9; G9 ; F;; 9G@@8 ;:; <; ?;; ;M@;=9;; 8>; ?;; @;8@ ;; ; %9; >%9 ; C8G ; 9<H;; =8 ; >8 ; 8G ; 8E=; ?< ; E;; BG< :; ?;; F< %; ; 8>; ?;; ?%=;; <B<%=9; ?;; >; 8$%8G9; 6; <=9; E?8; ?<A;; 98; 8> ;=; < ; @ ;:; <=:; E?8; E% ; < E<C9; :9% ;; 8; ;M$?<=B;; ?;; 98 % G:;; 8>; ?;% ; E88:9; <=:; 8 <9 ;9; >8 ; ?;; E;< ?; <=:; >; % % C; 8>; 6<G #; ?;; >< ; 8>; 8 ;; E8G :; F;; >%% <; 8; ?;; @ 8A%=$;9D <=:; C8G; E8G :; F;; FG %;:; %=; ?;; G%=9; 8>; ?< ; %B? C; ><F %$; E ?%$?; ?<9; F;;=; <%9;:; FC ?;; A< 8G ; <=:; E%9:8 ; 8>; ;%B? ; ?G=:;:; C;< 9; 8G ; % <B%=< C > ;;:8 ; E8G :; F;; %=9G ;:; <=:; 8@@ ;99;:; FC <

3 +; (0*-; 10 4(%&; -0 "" ,& $; :; F6#((*#+-; '&# 3; (0% %16%"" %-; *-(#&*%+-; ^ %-55 (,%-; %" ME" ; A& +1%; &*-; @< @ @; *+; %"%!%+; !#"6(+%-; *+; '#"*#; :; (0% " 9#6& #" # 3; F6F6%(+,; (0% #(0%& %+%,*1(*+%-; "" (0% #&*2*+ " (%-(*3#+*%-; -; '&; -; D G G; &%",*-4#-%,; *+; 0&#+#"#2*15; #&,%& +,; *""6-(& (%,; $*(0 "% &+%,; &*#(%-; g + (*#+ " $#&8; 0*1D $*+ 9%1#+(*+6%,; (#" (0% :% &; /GG; 3*20(4&#!#8% #6& %3 6" (*#+; _A#& C&%2#&:; #" #6&-; E1 ; -%% 44%+,*>; * b

D 1*(; *-(; 0*; @<; @.; *+; *#3; *; 4; ..g; #9&*,2%; 1*(6-; $#6",; *+,%%,; 9% 4&%-6 3 4(6#6-c; "N(; 3 :; -%"%1(; (0% 5 %& " *,% -; $0*10 0%; 44"*%-; (#; (0% 4&%-%+(; -((%; +,; '6(6&% &%!#"6(*#+-; #"; C 6"

6 <G% ;9 <=: < 9;% ;9 9G ;=R ; ; : 8 ?%9 < 9D ?; 8@N
@ ;99; : ?; > ; ; : 8 8> GA; B= ;D <=: ?; F%9?8@ $8=: ; 9$; = : ; :
8@G#?<9; ?%9 ;$< > 8 ;# ; FC < %FG ; 8>IG9 FG ; G$ <=
@ <%9;D %:8=%G9 E<% ; : F ;>8 ; ?; B< ;9 8> ?; @< <$; < 8=B <
$ 8E : 8> < F<99<: 8 # <=: 9G@@ %<= 9D <=: ?;% A< %8G9 FG9%=;99
< ?; $8G 8> 8 : ;<GM < ;9 ; : ?; @8E ; <=: ?; ;=8E = 8>
?; H%=B 8> ?; %9%B8 ?9 ?; ; G % 8> ?; :%9 <= 8$;<=
E ?8 @<%= ; : ?;% =<H; : F8 :%; 9 E% ? % 9 $9; G ;<= $8 8G % N
@ 8 ; : ?%9 @ 8 ;$ %8=D <=: ?; <M8=9 ;9@;$; : ?; < % % ;
@ 8A%=$;9 8> @ %=$; E ?8 E<9 : ;9 % G ; 8> <=C <A< >8 $; ?;
< G BG=: %<=9 9GF % ; : 8 ?%9 <G ?8 % CD =8 : %: ?; ;9 8 ;
?; $<@ %A; <=H9 % ?; ?<: % @89; : 8= ?< >%; $; =< %8= ?;
; 9 8> <= G=; JG< @;<$; ?; <=: < 9 8> >=$< $G %A< ; :
?%9 G9;>G > %; = # ?%@D <=: ?; 9 8B8 ?9 8> <==8=%< E ;
9G@@8 ; : FC 9 @8E ; >%% <%: <B<%=9 ?; 8@@ ;99%8= 8> ?;
=;%B?F8G %=B G=9 ?; 8 ?k9G$? < ; ?; 8> C <%=9 8>
?; @8; S E<9 <B% < ; : 8 <@@;<9; : FC ?; =8 : 8> G %$D ?;
B ;< H%=B 8> ; 9%< $ I9G ; : ?; 8 <$; 8> ?; ; @ ;N
< G ; : ;< ?8> ?; 6 8 ?%$ H%=B# < < % ; E ?; = ?%9 98= < I$
E<9 <= ?; @ ;99 %=><= <=: ?%9 <: A; 9< C 8A%9# <= < F% %8G9
<=: A< %<= C8G ?
?% ; : ; %$?; >< ?; 8> 8A%9 : %A; : <= ;M% ; %= 6 ; D
9 <=C ?; E<9 ?89@% <F C ;= ; <F%; : FC ?; JG; = <9 E ; <9
FC T ; H%=B 8> ?; ?G %=B%<=9 > ; 2%9 ;9 8 < %8= <9%=<
;9$<@; : > 8 ?; ?G9F<=: %9 F; : 8 ?; < 9 8>?; 8A; D > ; ; C
: ;$ < %=B ?< %>9?; ?<: H=8E = <= E%9; 9 8=B; 8 8 ;
F;<G %>% ?<= : ; %$?< <=9?8G : ?<A; F ; = ?; 8FI;$
8>?; ?; @ ;>; ;=$; T 8A%9 E<9 ?; 8>>9@ %=B 8> 9 A8 G= < C

N *,#+*6-'3 !***'%4*-(' <' '*+'(#3'*'4' ##' #&+ ((,%-'^,% %96-'C%(*1*-'1'
.@'4' G(R)6-(*'*%-'*4'-#3%3% -6&%'(0*-'4#&(& *(#"'(0%C#(0*1'0%&#

6-%'(0%' 3**' &' 44%"" (*#+' 1 '&#3'(0%' (*+'1 ! '#&
1 ! ⁄ 6((0%' '%>4&%--%-'4+":'(0%C%&3 +'-4*& (*#+J +,'(0%'(&6%'+ 3%
-'+#(',''%&%+('&#3'/! ! ' '= '^ 3',%'T 1 , ,3*%',%-' +-1&*4(*#+-'(#3
'@'-"S

0C& 2' 6&#+⁄3'**'1' " '*+'(#3'*'4'* ' -*+'5% 8-'(0%" +26 2%#"
(6&%'(& +8-'$0#0 ,'-%%+'0%&'+'(0%*&:#6(0'3*20(1#0!%&-%'$*(0'C&%2#&:'*+'
(0%*&'#",' 2%J +,'(0% 9*-0#4'#'' #6&-'%#6",'+#($*-0'(#,%' 3%,*%'3#(0%&'#''(0%
'*&-(0&*-(* +'8*+2' ^ 0%'-(#&:'(#",'9:'C&%2#&:'$*"" +#('-6-(*+'1&*('1*-*'((+,'0 -
"(0%"##8'#''9N+2',%&!%,'.&%;' '4%46" &'-#+2'#+'(0%9*&(0' "0"#,$*2' +%
#''(0%'3#-('-(&*8*+2'*&+4&#9 9*"*(%-'*+'*('*-'(0 (' #+'%>4%""*+2 0'",%&)%'(0%'A& +8-'
%"%1(%,'V 2*,*6-' -'(0%*&'8*+2' %% 6+20 +2' *-('%&*(' ,&'&52+%-',% 0*",%&*19'
%(',%' 0"#,#!%10'^(& +-'9:'C' #+ ,R'4' ' 0%',*''%&%+1%-'9%($%%+'(0%

G=%8=' Ù <=: ' E?;=' ?;' E<9 =8' 8 ;' ?<='>%> ; ;=' C;< 9 8>' <B; ' ?;' 9G$$; ; : ; : ' FC' ?% ' >< ?; %9 : ;< ?' 8' ?;' $8 <=:' 8>' ?;' < % 1' %F; ' ?;' ?< 8E' % % 9 8>' ?%9 H%=B:8 '#E; ;' $8=>%=; :' 8' ?;' %9 <=:' 8>' ?;' < <A%<=9' E% ?' ?;' <=$%; = ' :%8$;9;^ 8>' 8G <C' <=:' <9Ù <=: ' < ' ?;' F<@ %9 ' 8>' 8A%9' ?;' =G F; ' 8>' ?%9 E< %8 9 $8G :' =8 ' ;M$; ; :' >%A;' ?8G9<=: ' ?;' H%=: ;:' %F;9 8>' ?;' <=H9' E?8 ?<:' 9;< ; :' ?; 9; A;9 < 8=B' ?;' ; B%$' %A; 9' ?;' $?; : ' ?;' ;G9; ' ?;' :9; ; ' <=:' ?;' ?%=; ' E; ; B8A; =; :Ù FC' ?; % ' %=: ; @; = : ; = ' H%@B9 8>' ?;' ; 8A%%B%<=' <$; Ù ?;' ;JG< 9' ?;' < %;9' <=:' 98 ; % ;9 ?;' ;= ; % ' ?;' <:%;' @ %=$; %% G' ?;' 6; <=9' E?8 8F;C; ' %=' @; <$; ' ?;' ?; ; :%N < C IG %9:%$ %8=' 8>' ?; % ' $?%;>9 QE; ;' > ; ;' 8' >8 8E' ?;' < :< :' 8>' <' @8@G < ' <: :' A%$ 8 %8G9 B; = ; I>< Ù <=:' ?;' 9G@; %8>' ; % ' 8>' 8A%9 <' <$; :' ?;' ;9@; $ ' <=:' < ; B%<=$;' 8>' ?;' =< %8=<' $8=N >; : ; <$C ' ?;=' ?;' >% 9' 88H' ?;' >%; : ' ?;' ?<:' =; %?; ' B8 :' <=:' 9% A; ' %=' ?%9 $8>>; 9' =8 ' E%=;' <=:' $8 ' ?% ?%9 <B<L%=; 9 FG ' ?;' % % < ; :' ?;' ;M< @ ;' 8>' ;9< ' E?8 ' %=' ?;' 9< ;' $8<@ C ' ?<:' <$JG% ; :' E ;< ?' FC' ?;' 9E8 :' <=:' @G $?<9; :' 98 :%; 9 E% ' ?;' > G% 9 8>' $8=JG ;9 ' > ; ' ;<$?' 9G$$; 99>G ' F< ;' 8 ' ; M@; : % %8=' ?;' 9@8% 9 E ; ' <$$G G < ; :' %=' 8=; ' $8 8=' <99Ù ; A; C E< %8 ' ; $; %A; :' ?%9 @ 8@8 %8=<F ;' 9?< ;' <?:' ?;' 8C< ' @ ; 8B< %A;' 9GF % ; :' 8' ?;' ; JG< ' ;BG < %8=9 8>' % % < C <E ' ?;' G= < ; :' 9@% % ' 8>' ?;' 9 F< %<=9 E<9 <GB? ' 8' <$H=8E ; : B;' ?;' <: A<=N <B; 9 8>' ; BG < ' :%9$%@ %=; #1' ' ?;' <==G< ; A%; E' 8>' ?;' 8= ?' ' < $?' ?;>' < 9 E ; ' :' %?B; ? C' %=9@; $; : Ù <=: ' E?; =' ?; C

11#6+(' #'' C&%2#*: ,' (0#-%' #'' (0%' " (%&' -#6&1%-' ^C%-(' &%26 3' A& +##&6 3 ' +,' *-(&* '%4*(# 3 (' #'' A&%,%2 &*6-R &%' 6+*(44#&(+(' 6((0%&%* '+# '% -#0((# 1 '" *+' F6%-(*#+' (0%' + 3%' " 0"#, $*2'-' 8U YD6[, J' +,' $%' 3 :' , 3*((0 (' 8*+2'+ 3%,' , ! '3 :' 0 !%&%*2+%,'#!%&' (0%' 06&*+2* +-'*+' (0%M" :-#'' 0*", %&*1J '#& $%' '*+,' *-*+6-' '(%&$ &,-' -' '+ 3%'#'' 96&*+2* +' 3#+ &10- b

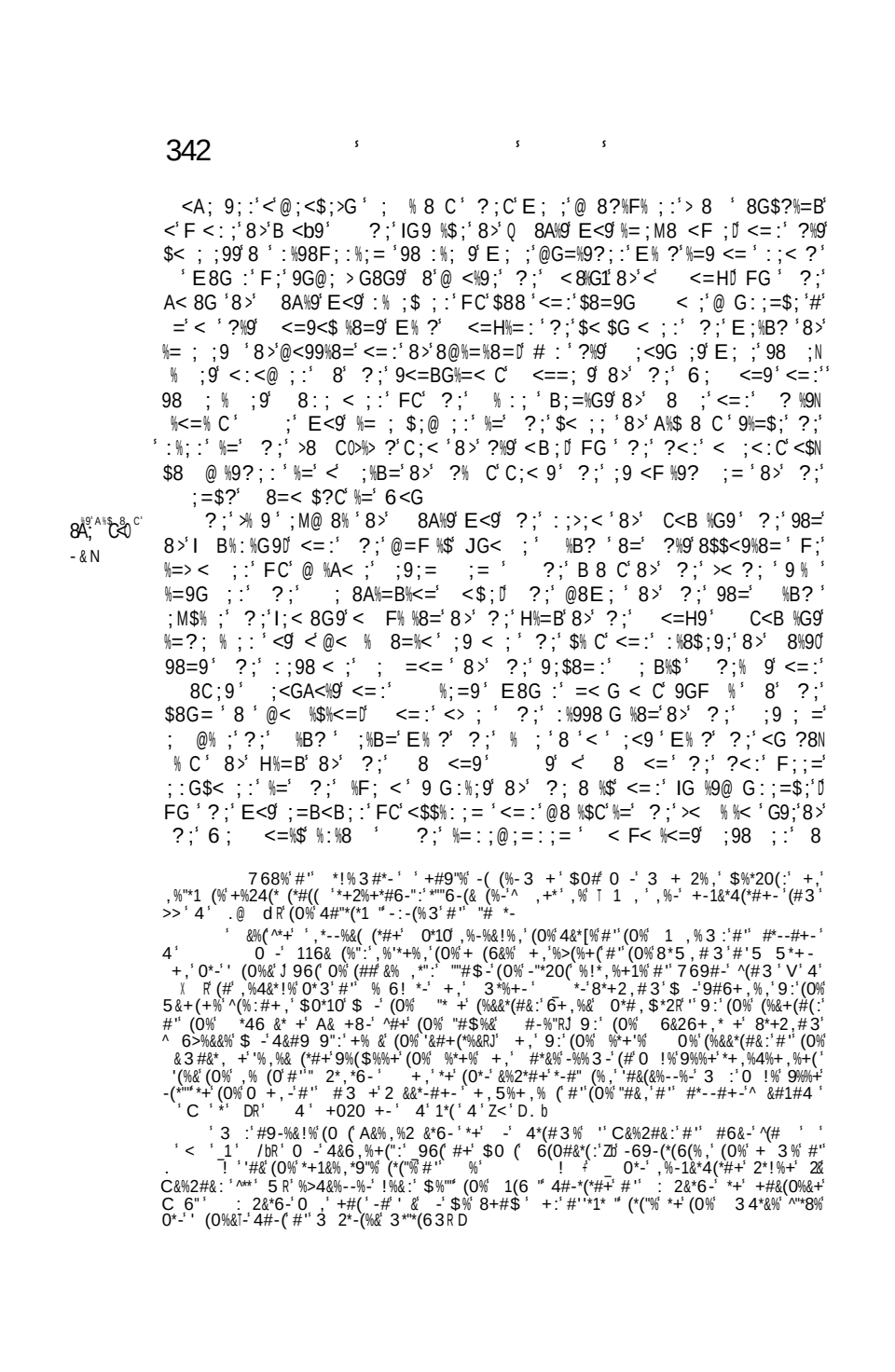
Q 0%' 99,' 760 '^ *-(' &*(*F6%',%' T (9"*--%3 *(',%" ' #0 &%9*%' A& +1#*-' , +-'"%-' C 6"%-' (#3 '*' 4' <G /GR 0 -' (*%' 3%&*(#'',%'*+*+2' (0%4((%**("!% ,*5,#3' #'' "#!*-' +,' #'' -1%&(*+*+2' (0%' 5+6*+%' +6 3 9%&'#'' 0*-' -69)%1(Z

R %,%-* 3' *+16"(3' 1' +%2"*2%+(*'*1*&*(' 2 +#&6 3'4&Z%(%' **-Z 3 ' !%4&*6 3' ,%+-*((%#44"%(3 ' E1' *(' %, -(*' *+' (#3 ' *' 4 ' <@ ' 0*-',%-1&*4(*#+'-644#-%-' (0 (&& -' $ -' 4#--%--%,' 9:' (0%' 2 +-' 3 +:' :% &-' 9%'#&%' (0%' 9 4(*-3' " "#!*-

P ('0 Z' 9%%+' 1#+)%1(6&%,' (0 ((0%',#3*+*#+-'#'' 0"#4$*2' 2+610 &^$0#-%' &%-*,%+1% $ -' (3 9& *' C&%2' .DR' +,' 0 & &*10' 1#&%-4#+, 5' &%-4%1(*!%":' (# & 9 +(' *+ 6"(' +,' A" +,%&-' J 6+20 +-' #4' 1*(' 4' D b

C&%2#&:F'H #+&-^" ' ł 1' ' *+' (#3 ' ' 4' D<DR' 1#+(& -(-' (0%' 4#!%&(:' " "#!*-' $*(0' (0%' $% "(0' #" 9*-' 2& +,-#+-' %(' %3*2*6-' *+' (#3 ' *! H4' /0R' 3%+(*#+-' 0* - 3 &3 6' -' -6' '*%*%+(' '#&' (0%' &%,%3 4(*#' '#'' 1 ¯!%-' 0'

(0-%%' C&5#(:' ^']*' %' D/0' <@' *+' (#3 ' 3' 4' * Q' DR' H(0%' ' +*4#-' -(#&:' #'' (0%' ! -%#'' # -#+-'%>4" 3+-' 9#(0' (0%' 4#$%&' +,' (9%10 & 1(%&' #'' !*-' -' ' 4#*+(' #''1#+(&#!%&-:' '*(' 0 -' 9%%+' -(& +2%":' (#&(6& ,' 9: #6" *+!*'''*%&-' G69#-' +,' ' (0%' #(0%&' 4#'*(*1 '' '((*F6 &* +-



?;' %FG=<' 8>' <' 9 <=B; ' E?8' @899;99;:' ?;'9? BG<' < ;=' 8>' ;M@ <%=%=B' %=' ?;%' =< %A;' 8@BG;' ?;' :%$ < ;9' 8>' ;<98=' <=:' ;JG% C' ?;' :%%B;=$;' <=:' <>><F%%C' 8>' ?;%' IG:B;' ;=:; ;:' ?% ' @8@G <' ?;' % @< %<' E%9:8 ' 8>' ?%9' :;$;;9' 8F <%=;:' ?;%' A8 G= < C' 8F;:%;=$;' <=:' ?;' ;%B=' 8>' C<B %G9' 8A;' ?;' <=H9' <=:' G BG=:%<=9' 9;; ;:' 8' ;A%A;' ?;' 8 %B%=<' %=9 % G %8=' 8>' $%A%' 98$%; C #' =' ?;' %:9' 8>' ?;9;' @;<$;>%%' 8$$G@< %8=9' C<B %G9' ;$;%A;:' <=:' F8 : C' <$$;@ ;:' ?;' ?89 %;' :;>%<=$;' 8>' 8A%9' D' E?8' $?< ;=B;:' ?%9' %C<' %=' ?;' 9@% % ' <=:' < =E ' %=' ?;' <=BG<B;' 8>'$?%A< C' 8' <@@8%= ' ?;' :<C' <=:' ?;'>%;:' 8>'F< ;' =' ?;' % ;' 8>' <;9< ' 8%998=9' E8G :' ?<A;'@8G ;:'>8 ?' <' F8:C' 8>' >%> C' ?8G9<=:' ?8 9;D' <=:' 9G$?' <=' < C' %B? ' W%<A;' F;:=' @ ;= %>G C' 9G@@ %;:' E% ?' 9?%; :9' $G% <99;9' <=:' % % < C' ;=B%=;9' > 8 ' ?;' ? ;;' < 9;=< 9' 8 ' <=G><$ G ;9' 8>' ?;' ?; $8G <B;' <=:' =G F; 9' 8>' ?;' 6< %$' C8G ?' E ;' 8=B' 9%=$;' ;M0' ?<G9 ;:D' <=:' ?;' 889;' F<=:9' 8>'A8 G= ;; 9' 8 ' ; $;=< %;9' E?@' < $?;:' G=:; ' ?;' 9 <=:< :' 8>' C<B %G9' E ;' %=;<@< ;' 8>' $8= ;=:%=B' E% ?' ?;' =< %8=<' A< 8G ' 8>' ?;' <=H9 ' ' E8G :' F;' G=B;=; 8G9' E% ?8G ' 98 ;' 8 ;' <$$G < ;' H=8E ;:B;' 8>' ?%9' 9 ;=B ?' <=:' ;98G $;9' 8' $8=:;= ' ?;' <@%:' >%B? ' 8>' C<B %G9' E ?8' ;9$<@;:' <> ; ' ?;' 899' 8>' <' F< ;' 8' ?;' :%9 <= ' $8G ' 8>' 8G 8G9;' ?;' >;;F ;' %=8 % C' 8>' < %$' $8G :' =8 ' <99%9 ' 8 ' @ 8 ;$ ' <=' G=>8 G=< ;' >GB% %A;D' ?;' @G9% <=% 8G9T1' 6 8 ?9' E; ;' %= % %:< ;:' FC' ?;' ;=<$;9' 8>' 8A%9D' <=:' ?;' 8 <=' 8B' <> ; ' <' 9?8 ' $8=>%=; ;= ' E<9' :;%A; ;:' %= 8' ?;' ?<=:9' 8>' ?;' ;P_;$G/' %8=; ' ?;' ;WB%$'$% %;9'9G ;=:;;:' 8' ?;' H%=B' 8>' ?;' <=H9D

*,#+*6-'^' !'%4*-('-'*+'(#3'*'4'@ .R' $0#'-()&"5'0*3'()*%' #"#+'(0% 340*#+' #'' (0% &9 &* +-' ,,&%--%-' (0*-' *3 2*+ &:' 8*+2' *+' (0% (#+% #'' '&*%+,-03' +,' %F6 '*(:' A&# 3'-610' #''*1%-' #' &9*(& (*#+' (0%'1& '(:' 7%)##%-' 0 ,' & *-%,' 3 3-%=' (# (0%' (0&#+%' #'' (0% %,%-'^ %&#,#(' '*' 1' 4,*##R

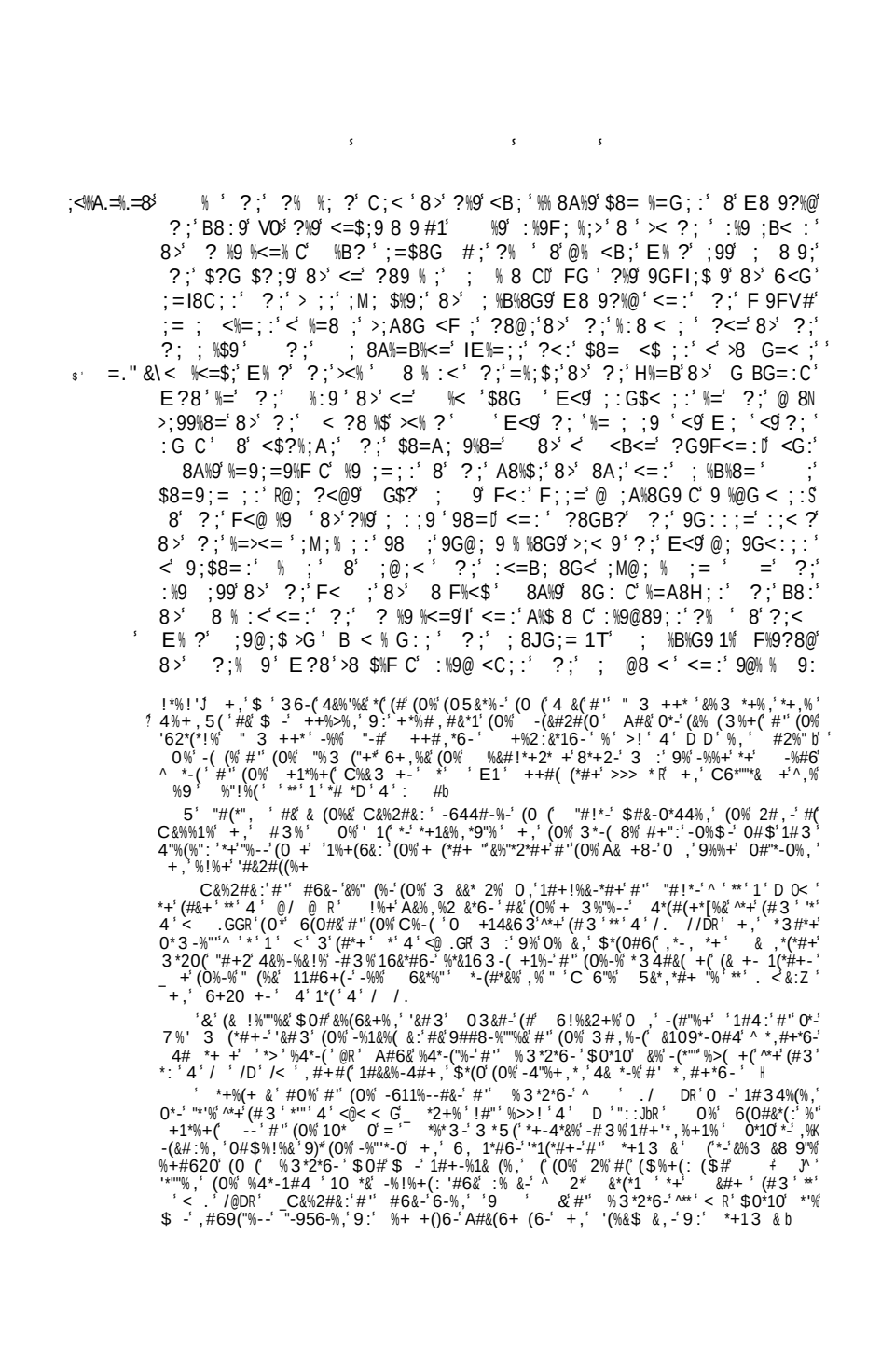
P' 3463'-*9' 4& %4 & &*)6--*(' ' *%(^4'DD D R'0 -',*''2%+("':' -1%&(*+%,' (0*-''*%",'#''9 (("%' (#2%+(' ' %+%,*1(*+% 99%:' 9#6((%"' 3*'%-'(#' (0%'+ 0'#'' #*--#+-' 0% 2&#6+,'$ -' 3 &8%,'9:' '1*&1'%' #' 2 +' -%46"10&%-J +,' "#!*-' 9%-(#$%,'(0% ,) 1%+(" +,-'#'' %6*"":' +,' #61:'#4'(0% 106&10'#' 0%*3-

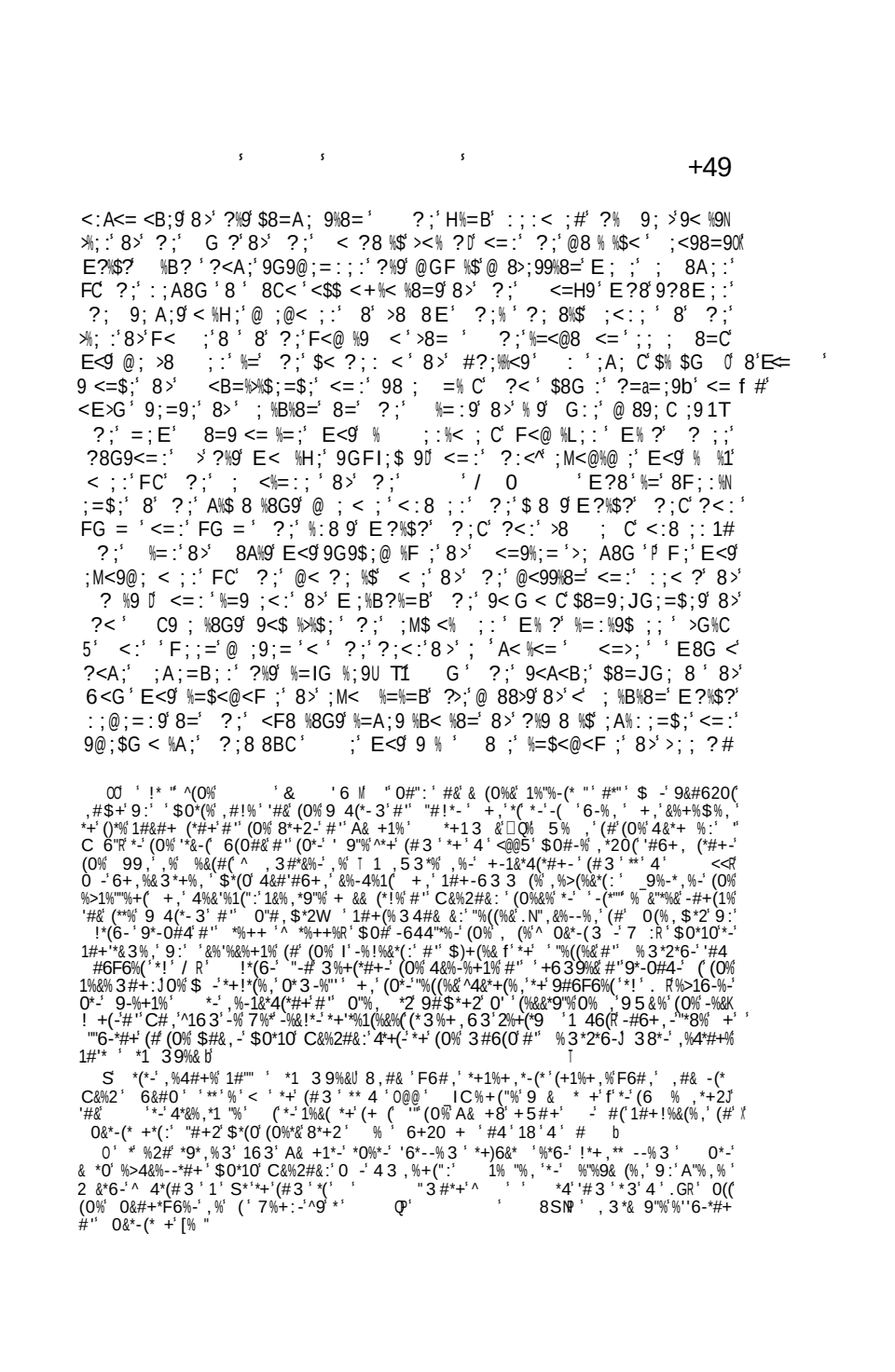
HO %%' %-&' #3 3%+(',%' %"'C ""*1'**' ,'*+'(#3'*'4'DDG' +,'(0,&(#(*(* %' (#3'*'4' D ' 0%' (0&%%' ;! '#'' #*--#+-' $%&%' ' ' +,' 1 ' 02'" -(-644"*%,'(0% 1# 3 4"%(%' &3#6&'#''(0'' 0% !:'16*& --*%&-

0%'%4*(0%(36-(9%'1#+'*+%,'(#'(0% 1*&16 3-(+1%-J +,'0*-(#):'1 ++#(')6-(*':' (0% A&%+10'4&%)6,*1%'#''C&%2#&:'^'**' 1'D@'*+'(#3'*)'4' @/R'6(C#(0#&6 3'4 !%&% '%-(

S_C&%2#&:'(%"'-'#'' (0% -*5%'#'' 0%*3-' '(%&' (0% !*1(#&:'#!%&' :(5&8*-' 0 (' !*1(#&:'%>(%+,%,'(0%',#3*+*#+' " 0"#,$*2'(#'(0% %*+%J *+'(0%'#"'#$*+2' :% & '0% ,! +1%,'9:',%2&%%-'(# (0% #*&%' 0*-' 4&#2&%--'*+,*1 (%,'*+' (0% '9:'(0% $#&,-'*$: &/ ? =' '^1' .R' +#(1"% &":'3 &8%,'*+'% &"*%&'-#6&1%-' ^C&%2#&:'4 --%-'*(!%&R'96('*(1 +'9%'(& 1%,'*+'(0% (#5'(# 9:'d#1#4*6-'^ 'C' *' DR'#''(0% ,% "*+2-'9%($%%+'(0%'A& +8-' +,'(0% &9#&610'#^$0# &%'1%&(* ":%(0%

+4,





?;ʾ %/% :ʾ %=> G;.%;;ʾ 8>ʾ ?;ʾ B89@; ʾE?%$?ʼ @; 9G<:;gʻ<=:ʾ @G %>%;gʻ ʾ, ?;ʾ?;< ʾ8>ʾ<ʾB;%GI%=;ʾ$8=A; ʾ %9ʻ< F% %8G9ʻ ;%B=ʾE<gʻ<ʾ@; N @; G<ʾA%8 < %8=ʾ8>ʾ 8 <ʾ<=:ʾ ? %9 %<=ʾ:G %;gʻ ? ?%gʻ?<=:gʻE; ;ʾ 9 <%=;:ʾ E% ?ʼ F 88:ʾ%=ʾ@;<$;ʾ<gʻE; ʾ<gʻ%=ʾE< ? <=:ʾ<gʻ988=ʾ<gʻ 8A%gʻ?<:ʾ:%9 %99;:ʾ<ʾ9I 8:ʾ8>ʾ?;ʾ 6< %$<%%$?G $?ʾ?;ʾ$< Cʻ <99<99%=< ;:ʾ ʾ?;ʾ@ %=$;gʻ8>ʾ?;ʾ ; 8A%=B%<=ʾ <$;111ʻ ;ʾ?;ʾ H%=Bʾ8>ʾ?;ʾ <=Hgʻ %B?ʾ9%=$; ;Cʻ E8 9?%@ʻ?;ʾ ? %9 %<=ʾ 68:ʾ <gʻ<ʾ ;%=Bʾ 8 ;ʾ ;M$; ;=ʾ'<=:ʾ@8E; >Gʾ?<=ʾ?%gʻ=< %8=<ʾ:;%%;9ʻ <=:ʾ ?;ʾ9%B=<ʾ:; %A; <=$;ʾ<=:ʾA%$ 8 Cʻ 8>ʾ 8 F%<$ʾ ;=$8G <B;:ʾ 8A%gʻ 8ʾ$8=>%:;ʾ%=ʾ ?;ʾ>G G ;ʾ@ 8 ;$ %8=ʾ8>ʾ ?;ʾ 8 :ʾ8>ʾ 89 9ʾ < %=ʾ?;ʾ 89ʾ@8@G<ʾ8>ʾ?;ʾ9<%=9ʾ?<:ʾ>% ;:ʾ ?>;ʾ ;9 ;=ʾ E8 :ʾE%?ʾ ?;ʾ>< ;ʾ8>ʾ?89;ʾ % <$;gʻE?%$?ʼ ; ;ʾ%=$;99<= Cʻ @; >8 ;:ʾ<ʾ?%gʻ?8Cʻ9;@G $? ;ʾ8>ʾ 8G 9ʾ %gʻA%9%F ;ʾ8ʾ%=A%9%F ;ʾ <%:ʾ@ 8 8 ;:ʾ ?;ʾ$<G9;ʾ8>ʾ<ʾ %F; <ʾ<=:ʾ8 ?8:8Mʻ @ %=$;Dʻ <=:ʾ ?;ʾ@ 8><=;ʾ ; <Hʻ 8>ʾ 8A%gʻ?% 9;>ʾ?<ʾ ʾ < %=ʾE<gʻ<=ʾ ;M@;=9%A;ʾ> %;=:ʾ =;;:ʾ=8ʾF;ʾ%= ; @ ; ;:ʾ<97 ?;ʾ9C @ 8 ʾ8>ʾ <=Cʻ @; <=;= ʾ8ʾ < %8=< ʾ9$;@ %$%9 ʾ G ʾ;< ?ʾ<gʻE; ʾ<gʻ ?;<A;=ʾ ;I8%$;:ʾ%@ʻ ?;ʾ $8=A; 9%8=ʾ8>ʾ ?;ʾ <=H9ʾ =ʾ ?;ʾ ; 8 <F ;ʾ :<Cʻ E?;=ʾ 8A%gʻ<9$;=:;:ʾ>8 ʾ ?;ʾF<@ %9 <ʾ>8= ʾ ?;ʾ<8=;ʾ%=ʾ ?;ʾ ? %9 %<=ʾE8 :ʾ:;9; A;:ʾ ?;ʾ=< ;ʾ <=:ʾ@ ;N 8B< %A;gʻ8>ʾ<ʾ < ?8 %$ʻ H%=Bʾ ?;ʾ; @; 8ʾ =<9 <9%Ggʻ ;= ; N <%=;:ʾ 98 ;ʾ :<=B; 8Ggʻ ; 8 gʻ $8=$; =%=Bʻ ?;ʾ=< G ;ʾ8>ʾ ?;ʾ :%A%=;ʾ%=$< =< %8=Dʻ <=:ʾ ?;ʾ < F< %<=gʻ8>ʾ < Cʾ > %$<ʾ @<%=ʾ <=:ʾ6<G ʾE; ;ʾ%=A8A;:ʾ%=ʾ ?;ʾ %<=ʾ?; ;9Cʾ ?;ʾ;:;9 ʾ8 ʾ < ?; ʾ ?;ʾ 8= Cʾ 98=ʾ8>ʾ ?;ʾ$?G $?ʼ E<gʻ<$H=8E;:B;:DʻFCʻ ?;ʾ $; BCʻ<gʻ ?;%ʾ <E>Gʾ98A; ;%B=ʾ8ʾB 8 %8Ggʻ:; %A; ;4 <=:ʾ ?;ʾ < gʻ8>ʾ 8A%gʻE; ;ʾ9 ;=G8G9Cʻ9G@@8 ;:ʾFCʻ ?;ʾL;<ʾ<=:ʾ><A8Gʾ 8>ʾ?;ʾ < ?8 %$ʻ><$ %8= T#

9=F %=%8=8ʾ =:;ʾ?;ʾ 8 <=ʾ; @% ;ʾ ?;ʾE;< ?ʾ <=:ʾIG %9:%$ %8=ʾ8>ʾ ?;ʾ F%9?8@9ʾ ?;%ʾ9<$;:ʾ$?< <$;ʾ <=:ʾ@; @; G<ʾ8>>%$;ʾ ?;%ʾ=G ; Dʻ 2ʾ :;@;=:;=9ʾ @8@G<ʾ ; 8JG;=$;ʾ <=:ʾ @ 8A%=$%<ʾ<99; F%;gʻ ?<:ʾ ;=:;;:ʾ?; ʾ<E<Cgʻ ;9@;$ <F ;ʾ<=: 98 ; % ;gʻ:<=B; 8G9

C&%2#&:ʾ^ʾ**ʾ1ʾ.G .<ʾ*+ʾ(#3ʾ**ʾ4ʾ < /Rʾ '(%&ʻ1##"":ʾ&%" (*+2ʻ(0%ʻ&%4% (%,ʾ 1&*3%-ʾ +,ʾ '%1(%,ʾ &%3#&-%ʾ#*' "#!*-ʾ1#+1"6,%-ʾ4%&0 4-ʾ 6+,%-*2+%,":ʾ$*(0ʾ '%--#+ʾ$0*10ʻ 39*(*#+ʾ$*""ʻ +%!%&ʻ0% &ʻV Pʾ *-ʾ'(, (& +- 1(*5ʾ ʾ ʾ #9*8ʾ0H

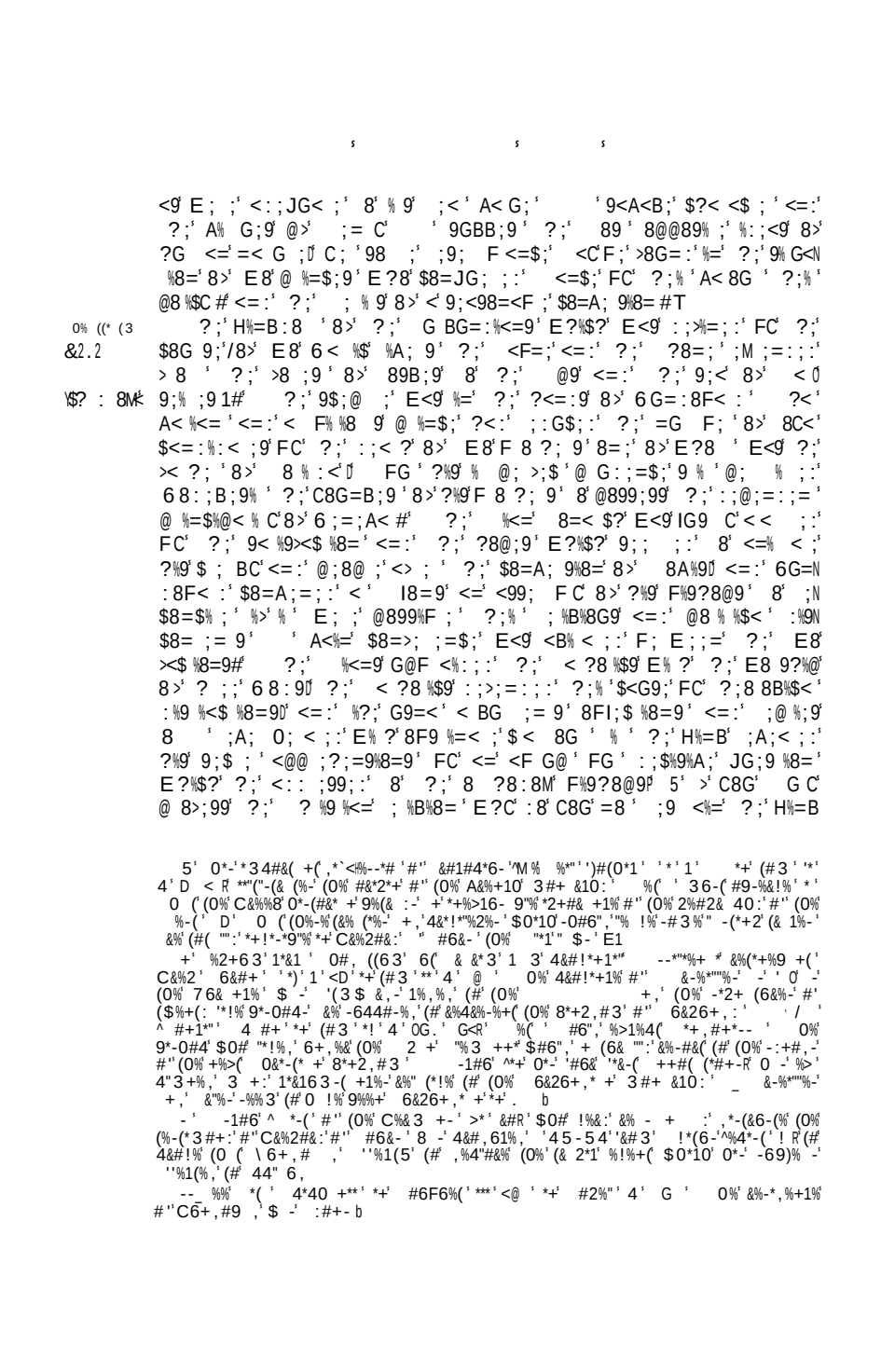
5ʾ '(%&ʻ (0%ʻ C#(0*1ʾ!*1(#&:ʾ "#!*ʾ3 ,%ʾ&*10ʻ#'%&*+2-ʾ(#ʻ (' ***&(*+ʾ#'ʾ #6&-ʾ %ʾ$*-0%,ʾ(#ʻ&%,%%3ʾ0*-ʾ$ & 0#&-%ʾ9:ʾ(0% #'ʾ#+%ʻ06+,&%,ʾ4*%1%-ʾ#'ʾ2#",ʾJ 96((0%ʻ%+10 +(%,ʾ-(5,ʾ1#6",ʾ+#"ʾ3#!%ʾ&#***ʾ5 ʾ-(9"%ʻ(*""ʻ(0%ʻ4&*1%ʻ#'ʾ0*-ʾ&%,%34(*#+ʾ 0 ,ʾ9%%+ʾ,#69"%,ʾ 0*-ʾ3*& 1"%ʻ4&#!#8%,ʾ(0%ʻ8*+2ʻ(#ʻ%>1" *3ʾ %&%ʾ &(*+6-ʾ %-(ʾ9#+6-ʾ*+ʾ 6>*"*#ʾ-%,ʾ1 3-ʾ)+ʾ +%2#(*#ʻ^C%-(ʾA& +1#&63ʾ*+ʾ(43ʾ**ʾ4ʾ//. 9998

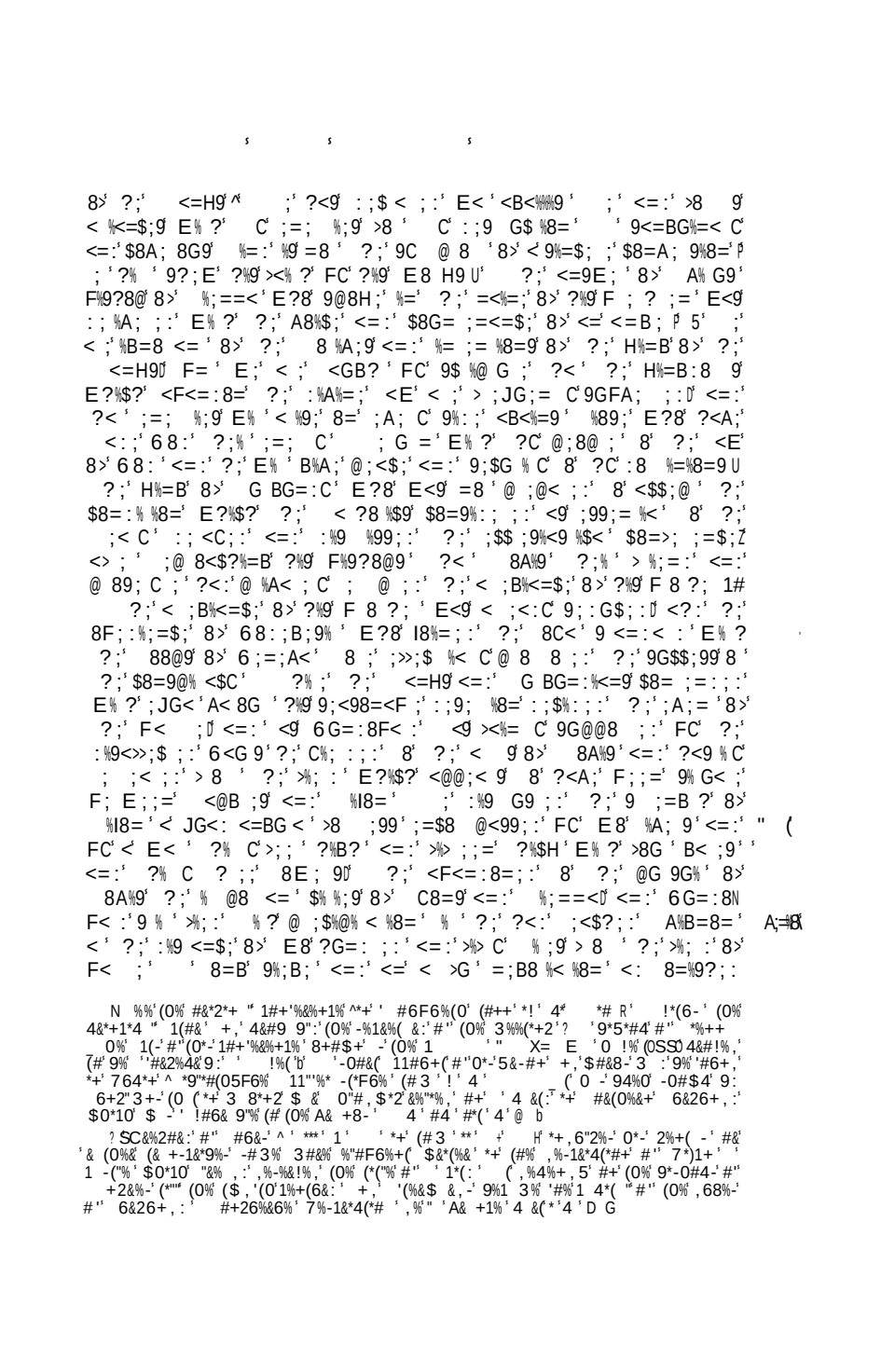
↑.ʾ ʾ(0%ʻ%4*-("%ʻ'&#3ʾ4#4%ʻ + -(-*6-ʾ(#ʻ(0%ʻ&#: "ʻ 1#+!%&(ʻ^*+ʾ(#3ʾ*!ʾ4ʾ/Gʾ /Rʾ !*(6-ʾ9*-0#4ʾ#"ʾ *%++ ʾ ,,&%--%,ʾ "#!*-ʾ#+ʾ(0%ʻ- 3%ʻ-69)%1(ʾ^4ʾ.Rʾ +,ʾ 3 +:ʾ#"ʾ(0%ʻ (*+ʾ9*-0#4-ʾ$#6",ʾ --6&%ʻ0*3ʾ '(0%*&ʻ)#:ʾ +,ʾ ((103%+(

?;%=> G;=$;E<9<GB ;= ;:E% ?? ?;\@<M0B;99 8><c@; 9 % %8% %0 <=:? ?;? ;9 <F %9? ;= 8>? ?;; =$?==8 %>$?C <C:%=98 ;: ;B ;;F;<9$ %F;:8 ?;>% < %<=$;8><=?G=: ;:@ ;<;9 E?8 ;%B=;:%=? ?;:%9$8= ;= ;:8 %=:;@;=:;= $% %;9 8>6)< ?;9 %B? >8G=:<%8=9 8> ?;& ;@GF%;?<:F;;= ;N @;<;:C9?<H;=8 8A; ?8E=0#T FG ?;9< ;@;8@ ;% BG< :;:? ;% :8 ;9 %$ > ;;:8%=0 <99; ;:? ;:%B=% #8>?;8 <= =< ;0 <=:F <A;C ;9%9 ;:? ;@ ;:<8C%=8<:9 <=:;BG <<$H9 8> 8A%9 E?8 <F8G ;:8;M ;=:?%9 $#GIE 9 >8 ?;;%=;8 ?;% ?;%9G$$;99>G8@@89% %8=%=F1 :G$;:<= ;JG<<=:?8=8G <F ;G=%8= ? ;<=H9 ;9 ;; ;:? ;A<8G 8> ?;8 %$<=9 TT <=:? ;8 %$<=9 E ;;V#0 $% ;:FC ?;; %B%8=8>?;<=H9 ? ;% % <C>8 $;% $?? ?<:F;;=9 <%8=;:>8 ?;:;>;=$;8>6<G $8=9%9 ;:8>@=8 ?G=:;:%>>;=F<=:9 8>$<A< C8 %=><= C0 <=:? ;9;88@9 E?%;? ;C<99G ;:? ;% ;<=:@ %A%;B;9 8> 8 <T98:11# E;;=;E;:FC <=%=$;99<=9G@@C 8>?;< F< %<=C8% ?;;M ;;>8 %>%$< %8=9<=:9$< ;;:>< B =9 8>?;;@?;; E;;9 % :;>;=:;:FC ?;%?8@;;99 $8G <B;G ?;%;<E<9 %= ;$;@ ;:<=:?;@ ;:E% ?8G 9?< ;8 ;G$ <=$;?;:B;=;8G9 $<@% G<%8=?$?E<9 @ 8@89;:FC <?8 %$?#@8 <=:?%9 9@G %8G9 8 ;B% % < ;@ 8B;=C8> ?;8 <=;B% @ E<9 :%9 %=BG%9?;:%=?;9G$$;;:%=B <B;FC ?;%< 9 ?;%;=9%B=9 <=:?;%@;$G %< :;99 <=:%=9 % G %8=9 G ?;% %8=<9 ;=B ?E<9%=$;<9;:FC ?;9;@8E;>G <=:A8G< C <$$;99%8=90 <=:?;=;%B?F8G %=B H%=B:8 9:;<:;:?;=G N F;9<9 E;<9 ?;9@% %8>?;<= ?;;;:G$ %8=8>.?; 8 ?;=@ 8A%=$;9 8><G %=9 ;G:8>F;%=B:;$%:;:FC # ;$?<=$;8><9%=B ;$8 F< <@@;<9 8?<A;F;;=9 8E C ;>>;$;:FC ?;B <:G<8@;<%8=8>E<<=:;<CD <=:8A%9<$JG% ;:;<$?8FI;$8><?%9<F% %8=FC 9G$?;>>8 9 8 9G$?$8=$;99%8=9

S C*9(>V+*-&%4&#,61*+2 ' . '(0%&% ,*+2'0*(0%#",'(%>(-#'H &#1#4*6-$0*10 &%-(%,#+*+'%&*#& -- J (0%(&6%&% ,*+2*#" (0N 9%-(--*-(P 0 !*+2 0 +2%,I$0*10 44% &-*+*(0%+%$'(%>(#" *2+#& #34 &%((*

+-(% ,#"(0%T 4^VV!>S $8 6+8+#$+ 4%#4"%$0 #$ 4E &'*+(0%(%>(#" &#1#4*! ,&* +,%" "#*-0 -V&%-(#&Q" (**%4&#4%& + 3% #" +,(0*-%1#&&%1(*#+0 -9%%+ "3#-(63!%&- "*:44&#!%, ' 0%9%-(0 !%T 4 46>#* +,(0%&%*-+#& %-#+(# 1F6*(&#&#4#* #" (0*-1#&&64(%(+6+4&%)6,*1%,&% ,%& $#6",+ (6& "":-644#-% -1&*9%#"C%&3 +-*+(0% " 51%#" #2*%J * #*(%-$0*10 9 ,&%!#"(5'&#3 5 '%-+4*'% ' %%9#!%'+#(%)-)





>$;H%#8>?;#//H98>?;:<%#;<=::%>%$GC8>?%;==;0
k>9;;%@89;:/%FG;8=;?;GBG=:%<=@%=$;$8N
@;;:?%8@<:8=<=:;E<:?%F8?;%;<$?;C<=:
@8G:C;G=;:8?%8E=:8%=%8=9E%?;?;9@8%%<=:
$<@%A;98>?;98G?;=@8A%=$;9?%9@;=:%:%G@?E<9
988=$8G:;:FC?;%=;%B;=$;?<6G=:8F<:?<:A%8<;:
%%9;$;=8F%B<%8=9#<=:?<;?;G=>8G=<;:68:;B;9%E?8
E<9;>;<;%;==<E%?<B<%98=8>%A;?8G9<=:<=H9#
?<:F;;=F;9%;B;:9G@%9;:<=:<99<$;:FC?%9%=?G<=
F8?;G$?<=G<B;%B??<A;;M<9@;<;:?;?@<%;=$;
8>?;89@;<$;>G98A;;%B=C;?;$8=JG;8>6<G:%9N
9;F;:?;%=IGC;;<9;:?;%FG;<=:<$$;@;:?;
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=8 8=B;@899;99;:?;9;<:A<=<B;9E?%$?<?<:<99G;:?;
9G$$;99 8>?;@;$;:%=BE<C<=:?%9%A<%=9G$;:FC<:C
A;%CO?<:>8G=:=;E;98G$;9%=;?;<>;$%8=9 8>?%9@;8@;
;?;6<G98 8 <=9<@@<G:;:?;%:<=:%@<%<<E9
8>6G=:8F<:E?%$?<89<%9;:?;8?;9<;;A;E%?
?;%$8=JG;8 9?;F%9?8@9E;;$8=$%;:<=:><;;:
FC?;?8@;9E?%$?;<>GC9GBB;9;:8>?%9<@@8<$?%=B
$8=A;9%8=O<=:?8GB?;G:;:?;%<$$8@%9?;=8
?;<9 8;=8>?%9%>;?%9 8:;<%8=9;;;:?;@;<$;
<=:9G#;=:;:?;G%=8>?;H%=B:8 8>G BG=:C
G# 8<%@<%;=8@G9G;?;>%=<G%=8>?<H%=B:8 E?%$?
<9<$$8@%9?;:G=:;?;;%B=8>%B%9 8=:?;98=8>
"&2 6G=:8F<:?;<?8%$%B%9 8=:?<9<$JG%;:?;?8=8G9
8><9<%=<=:<&O#FG?;?<=:98>?;8C<9<%=E;;
9<%=;:E%?;?;F88:8>?%9%==8$;=?98=E?8?;%=?G<=C
9<$%>%$;:8?;@%:;<=:;9;=;=8>< 9;@8?;;
988=:%9$8A;;:?%9;8<=:F;E<%;:?;%;@<<F;899

5H 0%5(#3**-%&#"C&%2#&:#"#6&-^+'(-**'4.GR0-'-644"*%,'(0*-
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0",'0%'4&6,%+(6&26+,*+-'-4&%,'(0%'-#",*%&-'#""#!*-'+,'-%+(0(0%-%X
1 4(*!%-'(#'(0%'8*+2'#"(0%'*-*2#(0-'$0#%((",'(0%3'*+'(0%'(%&&*(#&:'#"#6'
46-%'_A#&'(0%6&26+,*+'$&'$%'0!%'9%-*,%-'C&%2#&:'$0#&%4&%-%+(-'(0%
&+8&4#*+(#"!*%$'0%'0&#+*1"%'#"&*6-'-644"*%-'(0%',(%+,'(0%3*+'1(-'*+'
C&%2#&:'-'-(#&:'(0%&%*-''"%2%+,&:'%"%3%+(b
I+'(0*-'6&26+,*+'&'0!%'#""#$%,'C&%2#&:#"#6&-'^**'<D'<'
+'(#3''4'@'0#-%+&&(!%F'-#*+1#34(*9"%!$*(0'(0(''
&#1#4*6-'^,%%""'C#(0''*'1'D'*+'(#3''*'4'<<DR'(0(-%3%1&*(*1-'0!%
644#-%,''*''%&%+($&Z'0%'99,'7 9#'^*-('&*(*F6%'E1'(#3''**''4'
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O'%%'9*-'"*'%#&'"%2%+,'^*+'(#3'***''))MR'='3&(:&¢0#$'-(&+2%":'0-'(0(
$4&,'9%%+',*-(#&(%,''&#3'*(-'*2*+'"-%+-%#"'1#3 3#+'$*(+%--'('*2*-3#+,
-'&%3&8 9"%'#&'(0%6&8%''"'%!%&-

?% ;' %B%9 8=:' ; F <$; :' ?;' $8 @9;' 8>' >$;' <=>%= = #' C8 ?' ?;' ;$;%A; :' <' 9;A; ;' <: 8=% %8=' > 8 ' 8=;' 8>' ?%9' < ;=:<= 9' 5 ' %9 =8 ' ?%9' 9% G< %8=' ' H%=B'Ł % ' %9' ?%=;' E?%$?' :;9; A;9' @% C' <=:' < ;= < %8=U ' ?;' ;@ 8<$?;9' 8>' <' BG% C' $8=9$%;=$;' E ; ;' < ;A%< ; : ' ?8E ;A; ' FC' ?%9' %F; < ' :8=< %8=9' 8' ?;% 8=<#; C' 8>' B<G=G ' 8 ' ' <G %$;' %=' < <%9Ű ?%$?' ?;' ?% 9; >' ?<:' >8G=:;:' %=' ?8=8G ' 8>' ?;' % <B%=< C' < C 9' 8>' ?;' ?;F9;<=' ;B%8=1T' ' >G ' $?8 G9' 8>' @; @; G< ' @9< 8:C' E<9' ?%9 % G ;:' FC' ?;' @%8G9' H%=BŰ ?;' <99%:G8G9 C' @ <$ %9;:' ?;' <G9 ; ;:;A8 %8=' >' ?;' 8=H9Ű <=:' % ' E<9' ?%9' ?G F ;' @ <C; ' ?< ' ?;<A;=' E8G :' %=> %$ ' %=' ?%9' E8 :' ?;' @G=%9? ;= ' 8>' ?%9' 9%= ' %9' @ <C; ' E<9' ?;< :' Ű ?;' <A;=B; 9' E ; ;' < ' ?<=:Ű <=:' ?;' @ 8A%=$;9' 8>' G BG=:C' E ; ;' 8A; E?; ;:' FC' <=' < C' 8>' A%$ 8 %8=9' <=H9 ' > ; ' ?;' ;A;= ' 8>' <=' G=9G$$;99>G ' F< ; ' %B%9 8=:' E?8' %9?;:' 8' @ 8 <$ ' ?%9' %>;' ?< ' ?;' %B? ' @ 8 8=B' F%9' @;=<=8;' $8=$%9%:;:' ?% 9;' >' %=' ?;' :;9; ' %=' <' ; %B%8G9' ?<F% ' % ' ?;' E<9' :%9$8A;98:' <=:' F; <C;:' FC' ?%9' 9GFI;$ 9' E?8' 98 %$% ;:' ?;' ><A8G ' 8>' ?;>' =;E' <9;9' ?;' $<@ %A;' 8=< $?' E% ?' ?%9' %>;' <=:' E8' $?% :;=' E;;' <=9@8 ;:' 8' ;<=9' <=:' FG %;:' <%A;' %=' <' :;;@' E; ' 3#' ?;' 9 ; ' $8 <=:' 8>' ?;' 98=9' 8>' >W 8A%9Ű E?89;' $; #' %B? ' :; %A;' 98 ;' ;M$G9;' >8 ' ?;' <M% 9' <=:' ;M< @ ;9' 8>' ?;% ' F< F< 8G9' <B; ' ?;% ' < F% %8=' E?%$?' G B;:' ?; ' 18' <$?%;A;' ?;' $8=JG;9 ' 8>' G BG=:C' E<9' %=> < ;:' 8 ' :%9BG%9;:' FC' >% %<' @%; C'Ń <?:' 8 % :<' E?89;' 9<=$ % C' :%:' =8 ' $8=9%9 ' %=' ?;' >8 B%A;=;99' 8>' %=IG %;9' @ ;99;:' ?; ' 8' ;A;=B;' ?; ' >< ?; %9' :;< ?' 8=' ?;' >< % C' 8>' ?%9' <99<99%=' ?;' ;F; %8G9' G BG=:%<=9' > ' ?;C' < ; @ ;:' 8' F ;<H' ?;% ' $?<%=9' E; ;' 9 % ' @; % ;:' 8' ;=I8C' ?;% ' =< %8=<' <E9' G=:; ' ?;' 8F %B< %8=' 8%' %FG ;' /:' % % <%C' 9; A%$;Ił <=:' ?;' ; 8A%=B%<=' @ %=$;9' @;<$;<F C' ;%B=:;:' 8A; ' <' H%=B:8 ' E?89;' B 8 C' <=:' B ;< =;99' ?<:' F;;=' >$ ' 8A; 1' ? 8E=' FC' ?;' < 9' 8>' 8A%9' ?<:' %=9G %#:' ?;' ?8=8G ' 8>' 68 ?9' ?;C' A%;E;:' ?%9' <@%:' @ 8B ;99' E% ?' I;< 8G9C' <=W

' M &'#&%(0 %+,'#'' %'"'(011"*(#&:'(0% (%&10#' (' $*1%' +,'
"%2*#+'0 ,'&%+,%&%,' 2 6+6 3' '4" &%'#'',%!46(4*"2"$ 5% ' 4&#3*-16#6-' T'
36+*(:' "9#(0' -%>%-'9 ,'*+(&#,61%,'-#3%',%%,-'#'', &8+%--'$0*10'$%&%' 9#"*,(#,'
R ' / /R' 9:'(0%&%26" &' 3#+ -(%&:'#'' *2*-3#+,' *(0*+' '*'(:'%&-'0*-'
I ' 3 ,%' +#1(6&+ "- "":'(#' 36&,%&' (0%*&' 9*-0#4' +,'0*-'1"%&2:' %%'*((5 '
* *9"*#(05F((% "-#++%%' ^(#3' >->+*' 4' .</0.< R' (0%' 16&*#6-'&%+ &0J#'' '"% +%,'R'
"*9& &*' +' "C%+%!

' &*6-' 9*-0#4#'' !%(*10%' ^ 0&#+' *+' (#3' 6' 4' &/' #3 3-%+' 03 S'
*+ '**' 4' D<-bR'0 -' 3 &8%,'(0% 6(0%+(*1', (%-' +,' E%2#&:'#'' #6&-'^' *0' ' E'
#' *+' (#3' **' 4' R'0 -'%>4&%--%,' (0%'4&*+1*4 '#''%1(-'#''(0% ,%#''
+,' (0%'1#+F6%-(' #'' #&$3,:' &#1#4*6-' ^*+' (#3' '4' <.' _ Q ;0 0'
2 (9* -"+ '(#3 '#**' 4' . R ,*3&'&%3#(%' +,'*34%&'%1(8+#$Q%5N'
A8% ' ' "

8>ʻ ?;ʻ <=H9ʊ <=:ʻ ?;%ʻ L;< 8G9ʻ<:?; ;=ʻ +G‰I %<=G9ʻF%9?8@ʻ 8>ʻ
8:;L # @ ;<$?;:ʻ 8 ;ʻ>8 ;%B=ʻ<=:ʻ:8 ;9 %$ʻ;=; %;9ʻE?8ʻE; ;ʻ>8 %>%;:ʻ
FCʻ ?;ʻ< %<=$;ʻ8>ʻ ?;ʻ G BG=:%<=9ʻ < %$ʻ$8 ;$;:ʻ ?%9ʻ 88@9ʻ
><ʻ 8 ;ʻ=G ; 8G9ʻ ?<=ʻ?;ʻ % % < Cʻ @8E; 9ʻ8>ʻ 8A%9ʻ ?;ʻ
%9%B8 ?9ʻ ;9G ;:ʻ ?;ʻ;M; $%9;ʻ8>ʻ< 9ʻE?%$?ʻ ?;Cʻ?<:ʻ=;B ;$;:ʻ
%=ʻ<ʻ 8=Bʻ<=:ʻ GMG %8G9ʻ@;<$;ʻʊ <ʻ 9; ;$ʻ F<=:ʻ8>ʻA< %<=ʻ<=:ʻ
8FG9ʻ9<A;9ʻ< ;=:;:ʻ ?;%ʻ <9 ;9ʻ 8ʻ ?;ʻ>%; :ʊ <=:ʻ ?;ʻ
$% %;9ʻ 8>ʻ 6<G ʻE; ;ʻ $8 @; ;:ʻ 8ʻ >G =%9?ʻ ?;%ʻ :8GF >G ʻ';<=:ʻ
; G$ <= ʻ <%:ʻ ?;F:8 %$ʻH%=Bʻ8>ʻ ?;ʻ 9 8B8 ?9ʻE 8ʻ ;%B=;:ʻ
%=ʻ <C ʻ?<:ʻ<F8G ;:ʻ 8ʻ <%=ʻ?;ʻ <=JG% % Cʻ8>ʻ6<G <=:ʻ
?;ʻ<99G ;:ʻ8ʻ<> ;$;:ʻ>8 ʻ ?<ʻ@G @89;ʻ ?;ʻ% @< %<ʻ$?< <$;ʻ
8>ʻ<ʻ ;:%< 8 ʻ G ʻ ?;ʻ 9<B<$%8G9ʻ 8=< $?ʻ : ;<:;:ʻ ?;ʻ %9%=Bʻ
; @% ;ʻ 8>ʻ 8A%9ʻ<=:ʻ?;ʻ E<9ʻ>% Cʻ ;=B<B;:ʻ 8ʻ 9G@@8 ʻ ?;ʻ
=< %8=<ʻ<=:ʻ ;%B%8G9ʻ$<G9;ʻ8>ʻ ?;ʻ 68 ?9

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;M@;:% %8=ʻ8>ʻ 8A%9ʻE; ;ʻ <$$;@ ;:ʻ FCʻ<9G@; 9 % %8G9ʻ <B;ʻ <9ʻ
?;ʻ <=%>;9ʻ ;:$ < < %8=ʻ 8>ʻ ?;ʻ %A%=;ʻ><A8G ʻ ;ʻ < $?;:ʻ
> 8 ʻ < %9ʻʊ <=:ʻ<9ʻ?;ʻ@ 8$;;:;:ʻE% ?ʻ:;$;=ʻ ;A; ;=$;ʻ? 8GB?ʻ
?;ʻ?8 Cʻ:%8$;9;ʻ 8>ʻ 8G 9ʻ?%9ʻ <=M%; Cʻ ; @ ;:ʻ?% ʻ 8ʻ $8=9G ʻ
?;ʻ9? %=;ʻ8>ʻ ʻ < %=ʻ ?;ʻ 9<=$ G< Cʻ <=:ʻ ?;ʻ 8 <$;ʻ 8>ʻ 6<G
%90 ;99;=B; 9ʻ E; ;ʻ%=9 G$;:ʻ 8 ; < Hʻ ?;ʻ E8 :9ʻ 8>ʻ ?;ʻ
9< ʻ E?%$?ʻ 9?8G :ʻ ?<@@;=ʻ 8ʻ F;ʻ $?<G= ;:ʻ<ʻ ?;ʻ @ ;$%9;ʻ
8 ;=ʻ E?;=ʻ ?;Cʻ;= ; ;:ʻ ?;ʻ $?G $?ʻ ?89;ʻE8 :9ʻ 89ʻ
>8 G=< ; Cʻ ;M@ ;99;:ʻ ?;ʻ A< 8G ʻ<=:ʻA%$ 8 Cʻ8>ʻ ?;ʻ $?< @%8=9ʻ
8>ʻ ;<A;=ʻ<=:ʻ ?;ʻ <@@ %$< %8=ʻE<9ʻ;<9% Cʻ <=9>; ;:ʻ 8ʻ ?;ʻ
=;E'W89?G<ʻ ?;ʻ=;Eʻ6%:;8=ʻE?8ʻE;=ʻ>8 ?ʻ 8ʻF< ;ʻ<B<%=9ʻ
?;ʻ;=; %;9ʻ8>ʻ ?;ʻ 8:TTʻ ;<=9ʻ9;$G ;:ʻ 8ʻ ?;ʻ <=H9ʻ<

'Ʊ (ʻ *-ʻ -*+26" &ʻ %+#620ʻ(0 (ʻ -#3%ʻ*34#&(+(ʻ +,ʻ 6(0%+(*1ʻ ʻ 1(-ʻ -0#6",ʻ 9%ʻ
'#6+,ʻ*+ʻ ʻ"*'%ʻ#"ʻ^5*+(* +6-ʻ1#34#-%,ʻ *+ʻ&0:3%ʻ*+ʻ(0%ʻ#",ʻ. ʻ#"ʻ*5#6%&26%ʻ
^769#-ʻ *-(ʻ &*(*F6%ʻ 1ʻ(#3ʻ**ʻ4ʻ @ R
\6 3!*-ʻ '#&(*(6,*+ʻ# !%-(& -ʻ 1#+'*,%+(* 3ʻ (&*96 (ʻ 4 &%+(63ʻ !%-(&#&63ʻ *+ʻ
+63%& 9*"*-ʻ 36"(*(6,%J F6 3!*-ʻ ((*"3 ʻ4#(%+(%3ʻ &%3*+*-1 & *+#ʻ *-*2#(8 &63ʻ
!*&*96-ʻ*+1"*+ (63J (3%+ʻF6*ʻ4#46"#((*3ʻ '%&182 1#&, ʻ"#+2ʻ4 1%ʻ 3#""%-16+(ʻ
1 !%(%ʻ-*,7*(#*+ʻ "% 3ʻ3*((%&%ʻF6#-ʻ1#+-((ʻ3 +(*-ʻ(%34#&*96-ʻ%>%&1*(* ʻ+#+ʻ0 9%&%
(*10ʻ$ -ʻ (0%- "6(&:5ʻ9**(ʻ '&6*("%--ʻ ,!*1% #"ʻeV% 1%ʻ#"ʻ&% -#+Ʊ +,ʻ#"ʻ 0%#,#&*1ʻ
^ --*#,#&ʻ ʻ***ʻ%4ʻDRʻ 5 ;
5ʻ #+(%-F6*%6e -4&*(,%-ʻ #*>ʻ ʻ >!ʻ1ʻ .R 3%+(*#+-ʻ +,ʻ 44&#!%-(0%" $ʻ#"
(0% *-*2#(0-ʻ ^3*>ʻ (*(ʻ Dʻ*+ʻ(#3ʻ*!ʻ4ʻ .D/R $0*10ʻ#9"*2%,ʻ "" 3 -(%&-ʻ(#ʻ &3ʻ
+,ʻ-%+,ʻ#&"% ,ʻ*+(#(0%'*%",ʻ ʻ(%+(0ʻ#"ʻ(0%*&-" !%-
$ʻ 0*-ʻ 3#,%ʻ #"ʻ,*!*+ (*#+ʻ 9:ʻ 11%4(*+2ʻ -ʻ +ʻ#3%+ʻ(0%ʻ* &-(- 1&%,ʻ $#&,-ʻ
$0*10ʻ*+ʻ4 &(*16" &1*&163-(+1%-ʻ-0#6",ʻ9%ʻ&45%+(%,ʻ(# (0%%:%ʻ#&ʻ% &ʻ$ -ʻ,%&*!%,ʻ
'&#3ʻ(0% 2 +-J +,ʻ(0% - "(%&ʻ & *9"%ʻ$ -ʻ -69-(*6(%,ʻ(# (0% #%3-ʻ#"ʻ
#3%&ʻ +,ʻ *&2*"ʻ A&#3ʻ(0%ʻ'#6&(0ʻ(# (0%ʻ'#6&(%%+(0ʻ1%+(6&:ʻ(0%-%ʻ ʻ
! ʻ -ʻ (E:ʻE&%ʻ-(:"%,ʻ $%&%ʻ &%4% (%,":ʻ 1#+,%3+%,ʻ9:ʻ (0%ʻ ,%1&%%-ʻ#"ʻ
1#6+1*"-ʻ +,ʻ&%4% (%,":ʻ4& 1(*-%,ʻ 9:ʻ8*+2-ʻ 9*-0#4-ʻ +,ʻ- *+(-ʻ %%ʻ ʻ 16&*#6-ʻ
,*--%&((*#+ʻ#"ʻ(0% 99ʻ ,6ʻ %-+%"ʻ*+ʻ(0% 539*&%-ʻ,% T 1 ,5(*%ʻ (#3ʻ>*>ʻ4
D @ < G

++

F %:B;' .<' ?;' 3 4'Ø F Ø< ' ?;' :? <=$;' 8>' >8 C' %;9' > 8 '
8% %; 9' ?;%' @ 8B ;99' E<9' %= ; $;@ ;:' FC' <=' ;M <8 :%=< C'
9E; '8>' ?;' %A;' %B;==<'8 ' %;==;Ø =:' ?;' 8@@89% ;' F<=H9'
E; ;' $8A; ;:' FC' ?;' ;=$< @ ;='8>' ?;' %9%B8 ?9' ; <C'
G9' F;'< E<C9' :<=B; 8G9' 8' < F< %<=9' E?8' $8=9G ;' ?;'
$8G= C' ? 8GB?' E?%$?' ?;C' < $?'Ø<=:'?<:' 8A%9' @899;99;:'
;%9G ;'<=:' < ; %< 9'%' %B?'?<A;' F;;=' % @ <$ %$<F ;' 8' $8=N
9 G$'<'F %:B;'8' 8' >8 $;'<@<99<B;'%=' ?;' ><$;'8>'<9G@; %8'
;=; C' G' ?;' <>>;$ %8=< ;' @;<%9<= 9' E?8' E; ;' % @< %;=' 8'
E; $8 ;' ?;%' :; %A; ; '$8G :' ;<9% C' F; <C' 98 ;' G=H=8E=' 8'
G=BG< :;:'>8 :Ø ?;' ; %'8>' ?;' :%9$8A; C' E<9' ;=?<=$;:' FC'
?;' G9;>G'<' %= ; @89% %8=' 8>'> <G:'8'>%$ %8=' Ø <=:'<' E?% ;' ?< '8>'
9%=BG <'9%L;' <=:' F;<G C'<@@;< ;:' 8' BG%:;'<=:' <=% < ;' ?;'
< $?' 8>' ?;' < ?8 %$' < C' ?;' $8G=9; 9' 8>' ?;' %9%B8 %9'
E; ;'% ;98 G ;'<=:' :%9 <$;:' $ 8E:'8>'% @< %;='E< %8 9'
@ ;9G @ G8G9' %=' ?;%'9 ;=B ?'<=:' :%9:<%=%=B' 8'>C' F;>8 ;' ?;'
8FF; 9'8>'6; <=C' ;M$% ;:' < %$' 8' <99; '%=' < 9' ?;'=< ;'
<=:'F 88:'8>' ?;'$8=JG; 8'8>' 8 ;' ?;'<:A%$;'8>' ?;'B <A;'
$?%;> <%=9'@ ;99;:'?% ' 8' ; G:;' ?;' >% 9'< :8G'8>' ?;' <=H9'
<=:' 8' ;M@;$ '%=' ?;' 98G ?; =' @ 8A%=$;9' 8>' 6<G' ?;' A; ; <='
<=:'A%$ 8 %8G9' 9 8B8 ?9'E?8 ' ?;'H%=B'8>' < C'?<:'< ;<:C'
9;=' 8' ?%9'<99%9 <=$;' ?;' :;$%9%A;Ø 8 ;= 9' E; ;' E<9 ;:'%'
%: ;':; %F; < %8=Ø ?;'68 ?9' 88' ?<9 % C'<F<=:8=;:'@; ?<@9'<='
<:A<= <B;8G9' @89 Ø <=:' ?;' 8@@8 G=% C' 8>'<'9G ;' ; ;<' E<9'
89' FC' ?;%' 9 8E' <=:':%98 :; C' 8 %8=9' > ; ' 8A%9' ?<:'
@<99;:' ?;' >8 :'<9' %' %9' =< ;:'8>' ?;' A ' <:A<=$;:'
% ?' F8 :'<=:'?<9 C'9 ;@9' 8'@ ;A;=' ?;' ;9$<@;'8>' ?;' ;=; C'
%9' =8$ G =<' < $?' E<9' :% ;$;:' FC'<'> < %=B' ; ;8 '9G9N
@;=:;:' %=' ?;' <% '<F8A;' %;' $< ?;: <'8>' 8% %% 9Ø <=:' ?%9'
9%B=<' E?%$?' %B?'F;'@ ;A%8G9 C' $8=$; ;:' E% ?' ?;'8 ?8:8M'
9G$$;998'8>' ' % < C' E<9' $8 @< ;:' 8' ?;' $8 G =' 8>'>% ;'
?<'BG%:;:' ?;' 9 <; % ;9' %=' ?;' :;9; ' ' ?;' ?% :' ?8G'
8>' >%;' :<C'<F8G' ;=' % ;9' F;C8=:' 8% %; 9' 8A%9' 8A; 88H'
<=:' %=9 <= C' < <$H;:' ?;' 68 ?%$' < CØ E?89;' :;>;<' E<9'
< ;<:C'@ ;@< ;:'FC' ; '<=:' $8=>G9%8=' ; ' ?#' < %;:' %='
?;%';M ; ;':%9 ;99';<=:' ?;' < %<'C8G ?9' E?8' ?<:'$ < 8 N
8G9 C':; <=:;:' ?;'F< ;' ;>G9;:' 8' 9G A%A;' ?;' %B=8 %=C'8>'
>%B? ' ?;' E8' H%=B9' ;@;8G= ; ;:';<$?'8 ?;' %=' 9%=B ;'$8 F< '
< %$>; ' FC' ?;' ?<=:'8>'?%9' %A< Ø <=:' ?;' A%$ 8 %8G9' <=H'
E<9'9<A;:'FC' ?;'B88:=;99'8>'?%9'$G% <99'<=:' ?;' A%B8G ' ?%9'
?8 9;' > 8 ' ?;'9@;< 9' F>' 8' :;#@; <;' 68 ?9' E?8' >G %8G9 C'
8:;'<B<%=9'?% ' 8' ;A;=B;' ?;' :;< ?'8>' ?;%' 98A; ;%B=' ?;'
A<BG;';M@ ;99%8=' 8>'<' 8G= <%=' 8>' ?;' <%=' 9; A;9' 8' %=:%$< ;'<

Y < ;':'8>'
8 % #\

$ G; ' ?8GB?' %=: ;>%=% ; ' 9 <GB? ; ' FG ' 6 ;B8 C' ?<9' $< ;>G C'
8F9; A; :' ?< ' ?%9' A< %<= ' $8G= C <=' @8 %=< %9 ' ?;' 98=' 8>'
%:8=%G9 ' 89 ' ?%9' %>;' < ' ?;' ?;< :' 8>' ?;' =8F ;9' 8>' GA; B=;
; ?<@9' ?;9;' 9G9@;$; :' < ?8 %$9' ?<:' F; ;=' < %$%8G9 C' ;M@89; :'
8' ?;' F %=:' <99<G ' 8>' ?;' ;=; C' ' <=:' @; ?<@9' ?;' %=> G;=$;' 8>'
; %B%8=' E<9' 9G@; 9; : ; :' FC' @; 98=<' < <$? ;= ' 8 ' % % < C'
?8=8G U#
G$?' %9' ?;' ; @% ;' 8>' 8 G=;' R%>' E;' <C' 9 % ' :%9BG%9;' 8G $8=BA;< 8 '
%B=8 <=$;' G=: ; ' ?< ' @8@G < ' =< ;S ' ?< ' % ' %9' < 89 ' ;JG< C'
: %>%$G ' 8' >8 ;9; ;' ?;' ;A;= 9' 8>' E< ' 8 ' 8' ;M@ <%=' ?;% ' A< %8G9'
$8=9; JG; =$; 9 ' ' F 88 :C' <=:' $8 @ ; ;' A%$ 8 C' ?<9' 98 ; % ;9'
C%; : ; :'=8' 8 ;' ?<=' ?;' @899; 99%8=' 8>' ?;' >%; :' ' <=:' ?;' 899' 8>'
;=' ?8G9<=:' ;=' ?<9' 98 ; % ;9' F; ;=' #9G>%$%;=' 8' :;9 8C ' %=' <'
9%=B ;' :<C ' ?;' E8 H' 8>' <B;9 ' ?;' ; :;$%9%A;' F< ;' 8>' 8% %; 9'
E<9' >8 8E; :' FC' ?;' $8=JG; 9 ' 8>' JG% <%=' < %$' ?<:' ;>'
F; ?%=:' ?% ' <=' %=><=' 98=' <' F<9 < :' $8 @; % 8 ' ><$ %8G9' =8F ;9'
<=:' <' :%9 8C<' @; 8@ ;' ' <=:' ?;' ; <%=%=B' >8 $;9' 8>' ?;' 68 ?9'
E; ;' 8@@ ;99; :' FC' ?;' B; =; < ' $8=9 ; =< %8=' 8 ' 8@@89; :' 8' ;<$?'
8 ?; :=' $%A% ' :%9$8 :' ?;' A%$ 8 %8G9' H%=B' 8>' ?;' <=H9' @ 8N
$; ; ; :' E% ?8G ' :; <C' 8' ?;' 9%; B;' 8>' =B8G >% ;' ' ?;' 98G=:'
8>' ?%9' G @; 9' ?;' E< 9' 8>' ?;' $% C' % % < ; :' ?;' ;M< @ ;' 8>'
W; %$?8 ' <=:' %=9 <= C' >; ' 8' ?;' B 8G=: ' <' 9@ ; =: %:' % <$;'
E?%$?' <C' F;' ; :G$; :' 8' ?;' 9G@@89% %8=' ?< ' 98 ;' $; %$<'
;=B%=; ; 9' ?<:' 9;$; C' G=: ; %=; :' ?;' >8G=: < %8=9' 8>' ?;'
< @< T1' ' 8 :;<GM' E?%$?' ?<:' 9GF % ; :' E% ?8G ' ;9%9 N
<=$; ' 8A%9' ;9 <F %9?; :' ?%9' E%= ; ' JG< ; 9' ' <=:' ?%9' @ G: ; =
;$8=8 C' <=9@8 ; :' >%8 ' 8G 8G9;' ?;' 8C<' ;<9G ;9' E?%$?'
E; ;' : ;@89% ; :' %=' ?;' $<@% <' 8>' ?;' 8=< $?C' ?;' $8=JG; 8'
@; =; < ; :' <9' >< ' <9' ?;' $8=>%=; 9' 8>' @<%=' ;9 8 ; :' ?;

'(%&' 1#&&%1(*+2' (0%' (%>(' #&' %>16-*+2' (0%' 3*-(8%' #'' &#1#4*6- ' $0# 4" 1%-'
' (0%' ,%'% (#'' " &*1' +% &' &1 --#++%' $%' 3 :' 1#+1"6 ,%' '&#3' (0% %!*, %+1%' #''
C&%2#&: ' A#&(6+ (*-' +,' (0% 6(0#&' #'' (0%' C%-(' A& +1#&6 3 ' (0 ((0% 9 ((''% $ -'
'#620(' =' ' (0% 9 +8-' #'' (0% " *+' _ #6*''' 5' 3 #&%' (0 +' (%+'
3*''%-' '&#3' (0%' &*!%&J -%% %+2+#+ ' C%#2& 40*1' ,%' " ' C 6"%' 6 !*3% -*51''%' '@
9#6((%+' 3*''%-' (# (0%' -#6(0' _+#&(0b' #'' #*(*%&- ' "#!*-' #!%&(##8' +,'
((18%,' (0% *-*2#(0-' +% &' *!#++%' +,' (0%' !*1(#&:' $ -' ,%1*, %, ' +% &' ' !*'' 2%'
-(*''' + 3%,' 0 34 2+%' (' *'' *&%' %%' (0% 7*--%&((*#+-' #'' (0% 99 ,' '%' 1%6' '
(# 3 ' *' 4 ' <G. << ' (' *-' #, ,' (0 (' &#1#4*6-' -0#6",' 3 8% &1 --#++%(0% -(& (%2*1'
#9)%1('#'' (0% A& +8- +,' (0% -1%+%' #'' (0% 9 (("% ' %' - :-' (0 ((0% (&% -6&%-' #'' (0%
*-*2#(0-' $%&% (0%&% +,' -%% 3-' (#' 1#+'#6+,' *($*(0' #''#- ' =&#3' $0 (' -#6&1%'
,*,' 0% ,& $'Z = 4> (&* *5' 3 :' 0 !% 9%%+' 9%-*%2%,' (' " (%&' -(2%' #'' (0% $ & b' ;

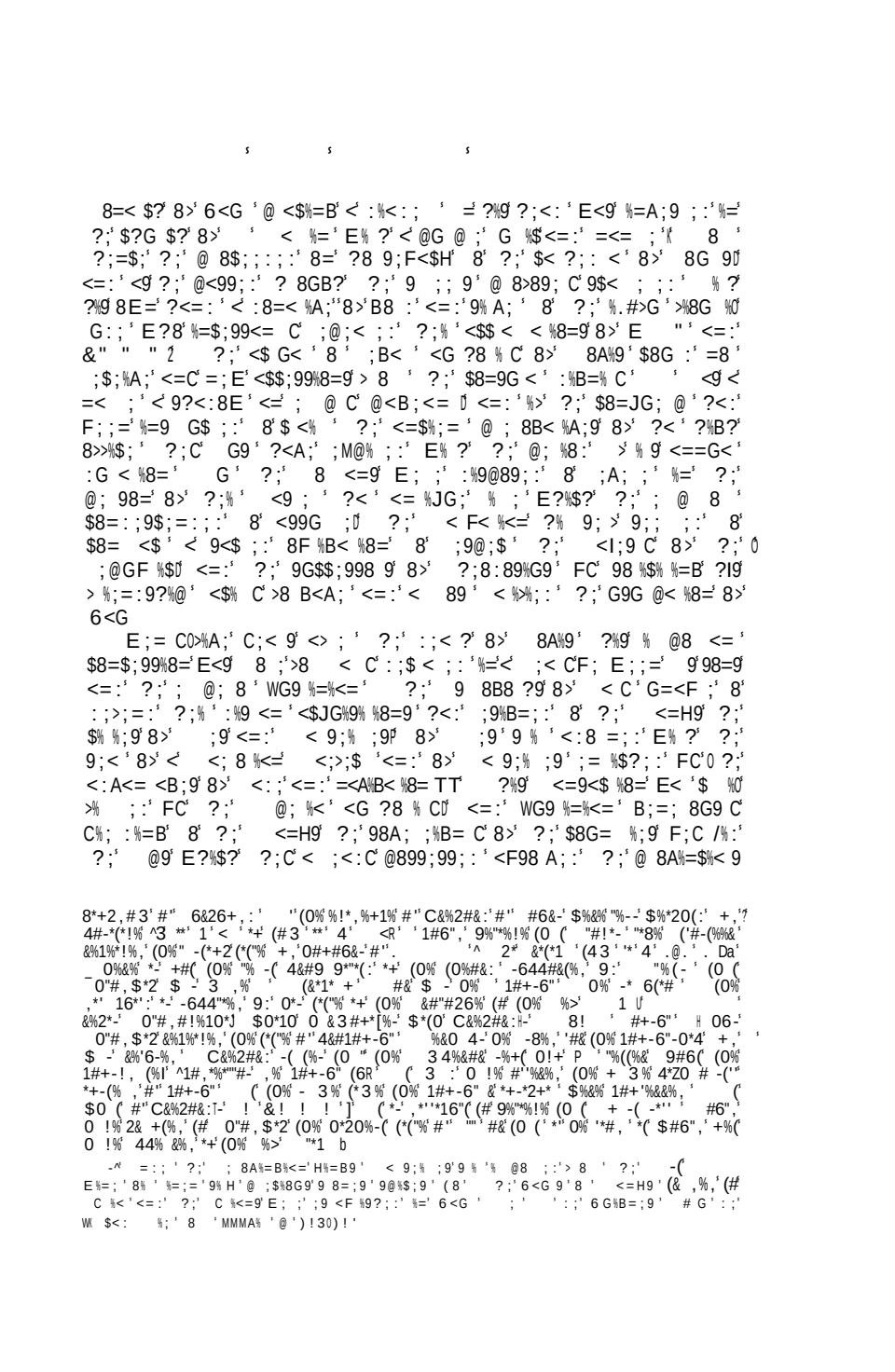
S' +2#6"% 3 % *-'*+' (0% &# ,' '&# 3' #*(*%&-' (#' #&, % 6>' J +,' "(0#620' C&5 #&:'
,%" :-' (0% -*%2% ' ' 1 +' 3#&% &% ,*'':' 9%"*%!% (0 (' 0% 1#+'#6+,%,' (0% #&, %&' #''0*-(#&:'
(0 +' (0 (' "#!*-' +%2"%1(%,' (0% &6"%-' #'' $ &

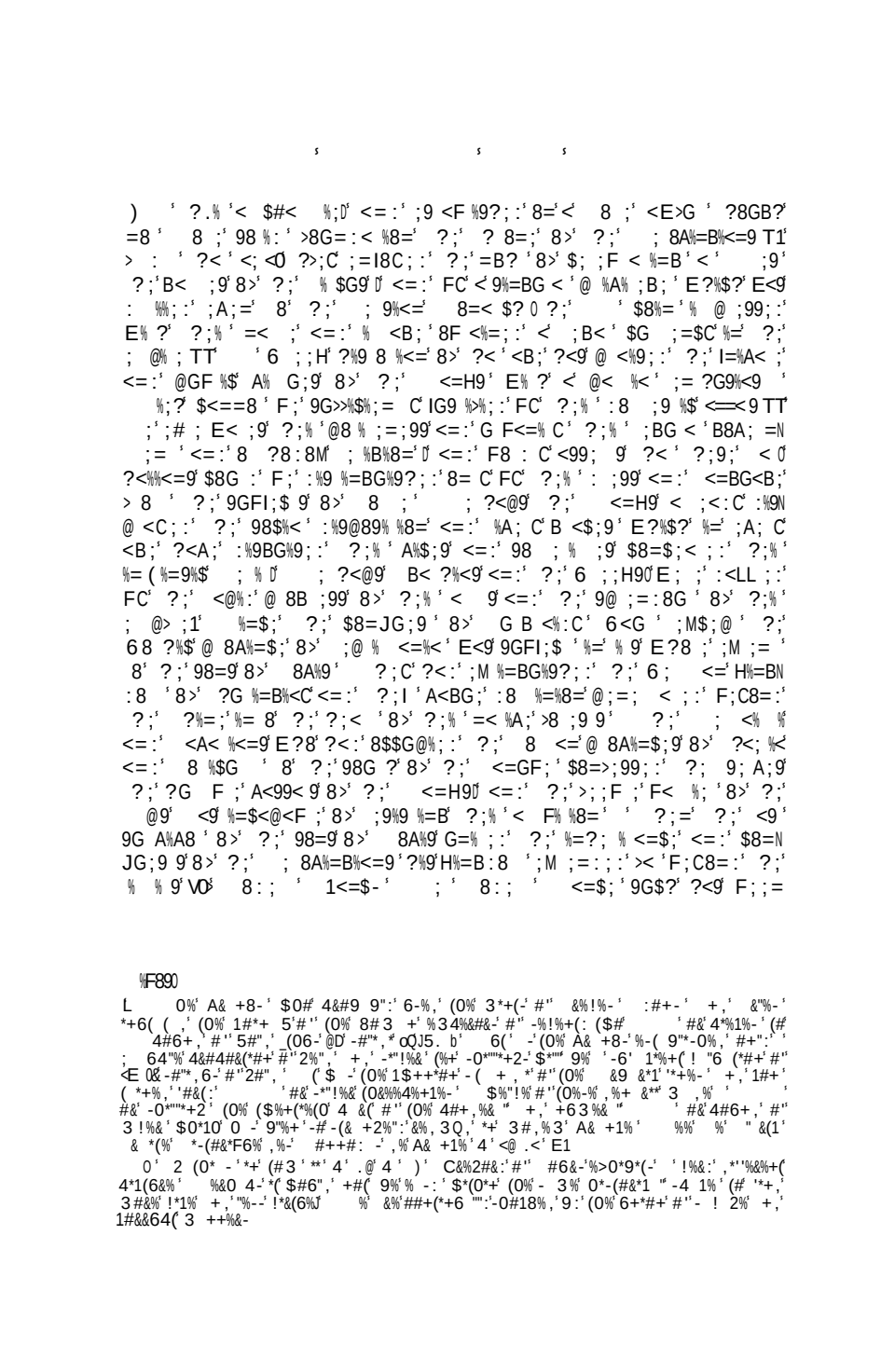
:&%+ -#-' 3#+*%-' 6-F6% %&4*+* +6 3' -69)%1*(' *-' (0% %>4&%--*#+' #'' #&*1#'
$0*10' 9%(& :-' 0*-' &%1%+(' , (%J -*+1%' %&4*2+ +' , *,' +#(' %>*-(' 9%'#&%' (0% (%+(0

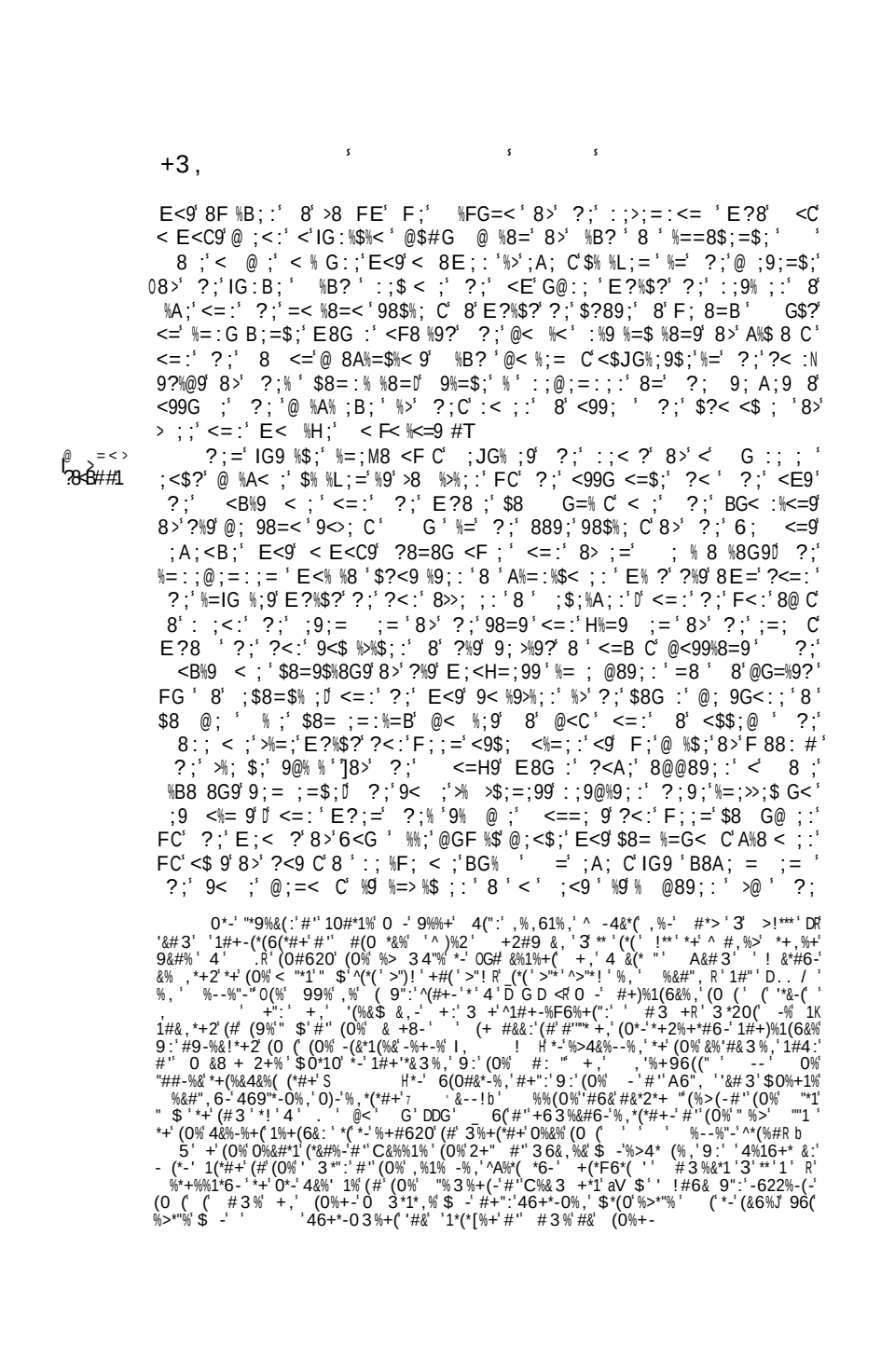
?8=8% 8 > ? < < ?8 $ $?G $? %M : %= JG% <%= < $8 8=C 8
=H<T <= : : ; B< ; : 8 F% % ;G ;=<= 9 ? ; ;<9C <9H 8
9GF:G%=B 8 > ;M % @< %=B ? =< %8=X8> ? %9%B8 ?9 G ? %9%B8 ?9 E ; @ 8 ;$: FC ? E%9 <= : @8E ; >%% 8=< $? 8
< C ?% ; ? F< <=$ E<9 9 % ;JG< ? ;8 : 8 %$?< : @ ; ?<@9
: <C : ? < $? 8> ? 9 JB8 9 FG ? ;% 9 ;=G8G9 ;>>8 9
9G$$;99>G C ;9%9 ; : ? < F% %8= A%9 <= : ? < C 8
? <=H9 <= : ? ;% G BG= :%<= < % ; E<9 $8 @ ; : 8 <%9
? 9% ;B ; 8> ;9 E% ? ? 899 <9 % 9 9<% : 8> ?% C ?8G9<= :
= ? ;9 A%$%99% G : ; %=$ %= : ? >% $ 9@% % 8> 8A%9 8
<$JG% ;9$ %= <= < :A<= <B ;8G9 ;< C 8> @ ;<$? ? %9%B8 ?9
E ; 9G>> ; : 8 ; <%= ? @899 ;99%8= 8> ;@ % <=%< < =< 8E
<$ 8> 9 ;<0$8<9 > 8 ? ? ?8= 8 ? I# = ; 9 FG ? ?
< @ ; @ 8A%=$ 8> JG% <%= > 8 ?89 8G= <%= 8 ? ; 8% ;
E< =%= %998 GF C G=% : ; 8 ? H%=B 8 8> <=$ T#
> # ? ; 9G$$;99 8> ? ; 68 ?%$ E< 8A% <$$;@ ; : ?
?8=8G 9 8> ? ; 8 <= $8=9G 9?%@ ? ; ; @ ; 8 =<9 <9%G9
< F% %8G9 C F ;9 8E : 8= ? ; 89 @8E ; >G %A< 8> ? ;8 : 8 %$
? ; % ; <= : ;=%B= 9 8> ?< ; %= ;= : %B=% C ; C ; > 8 98 ;
G=H=8E= $<G9 ; ? ; =< ; 8> 8A% ?< =8 F ; ;= %=9$ %F ; %=
? ; K ;% ? ; 8> ? ; <9 8 ;9 1# = ? ; 98 ; = : <C ? ;

1%+((** : ^ &1 *5 +*1 4 ./ R 0*- '"4&* + 96"#6- $&*(%& '4%&0 4- 3#+8 # 3*%+- (0% 99 '"% #%6' 3 1 ,5 3*% (# 3 -(!** 4 DD N./R &%" (%- *+ (0% 10 & 1(%& # -0%4O%& (0% 2%+%& 0*-(#& 0*- 1#6+(&: 3%+ (0% A& +8- 96(0*-+ & (*!% %+M* $*(0 (0% ,% (0 # "#!*-
5 0% 6(0#& # (0% C%-(A& +1#&6 3 4#-*(*!% : *& 3- (0 ("#!*- *>%, 9#, : # A& +8- *+ (0% "+(#*5% +, #6&,%"#*- +, 0%*- +#(*+)6,*1#6- : "# $%, 9 : #&*1# % %1(#- 3 * %(%- (F6% &(*--*3#- 16 3 4 &!6R*- (F6% 36 %&* 96 %(*(-0#6 , -%% 3 (0 (0% :-##+ 3*+2%, $*(0 (0% 2# 3 4- # F6*(*+ (* 0 &% 3 2+% *+(&#1) 1%, 3#&% +6 3%&#6- +, 4#$%& 6 1# #+: ^7((9#- *-(&*(*F6% (# 3 ** 4 (-R
S +(0% 1# 3 4#-*(*#+ # (0% C#(0*1 $ & 5 0 !% 6-%, (0% # %+2 3 5 %- $*(0, 6% &%2 &, (# (0%*& 6+%F6 ! 6% A#6& %4*-(%- &# 3 0%#, #&*1 8*+2 # (: ^ --*#, #& ** %4*-(.+(# 3 *! 4 <0/ 14 -# (0% %((%& # (0 &*1 -* 5#& !** (#) 0#1#4*6-],% % C#(0 3 & 1 *+ *+ (# 3 ** 4 <D <5 C&%2#&: # #6&- 3 1 </ < <@ *+(# 3 ** 4 <R # 3 +,%- ^,% %+ C%(*1*- 1 / *+(# 3 ** 4 D R A#&(6+ (6- ^*+(*((* ** *+(# 3 *** 4 < GR -*,#&% ^*+ 0&1S C#(0 *+(# 3)* 4 @G R (0% 4*(# 3% M C&%2#&: # #6&- ^*+ (# 3 ** 4 .G R (0% &86(0#& # (0% C%-(A& +1#&6 3 ^*+(# 3 ** 4 O PH A& 23%+(5 # A&%,%2 &*6- ^*+(# 3 ** 4 . <R *3#*+ ^ 1 DG *+(# 3 *** 4 . .DR +, #&*1# 5 *! *+(# 3 *** 4 . R 5 -# M$ -*5% # &"%- \ ; 1 *+ # "6%(!# *** A6&(0%& (0% C **1 0&#+*1% # / %, # 3 3-%+ 0&#+ *+ * 4 /J +,(0% 0&#+ # >*3 6- % & 626-(+ ** 4 DD<<

S 0%; # (": $#6",+ (6& ": &%)%1(1#+-6 (0% %+% 3 : # (0%*& - !% +# *+24*#+- 0:4#(0%-*- (0 (3*20(%>4 *+ (0% -*%+1% # #+-(+(* Z10 R *- # %&(+&+&'9: %4 5 &+* J 9*-0#4 # !%+10% $0# 1#+*4#-& 0*- .)+ ^0%







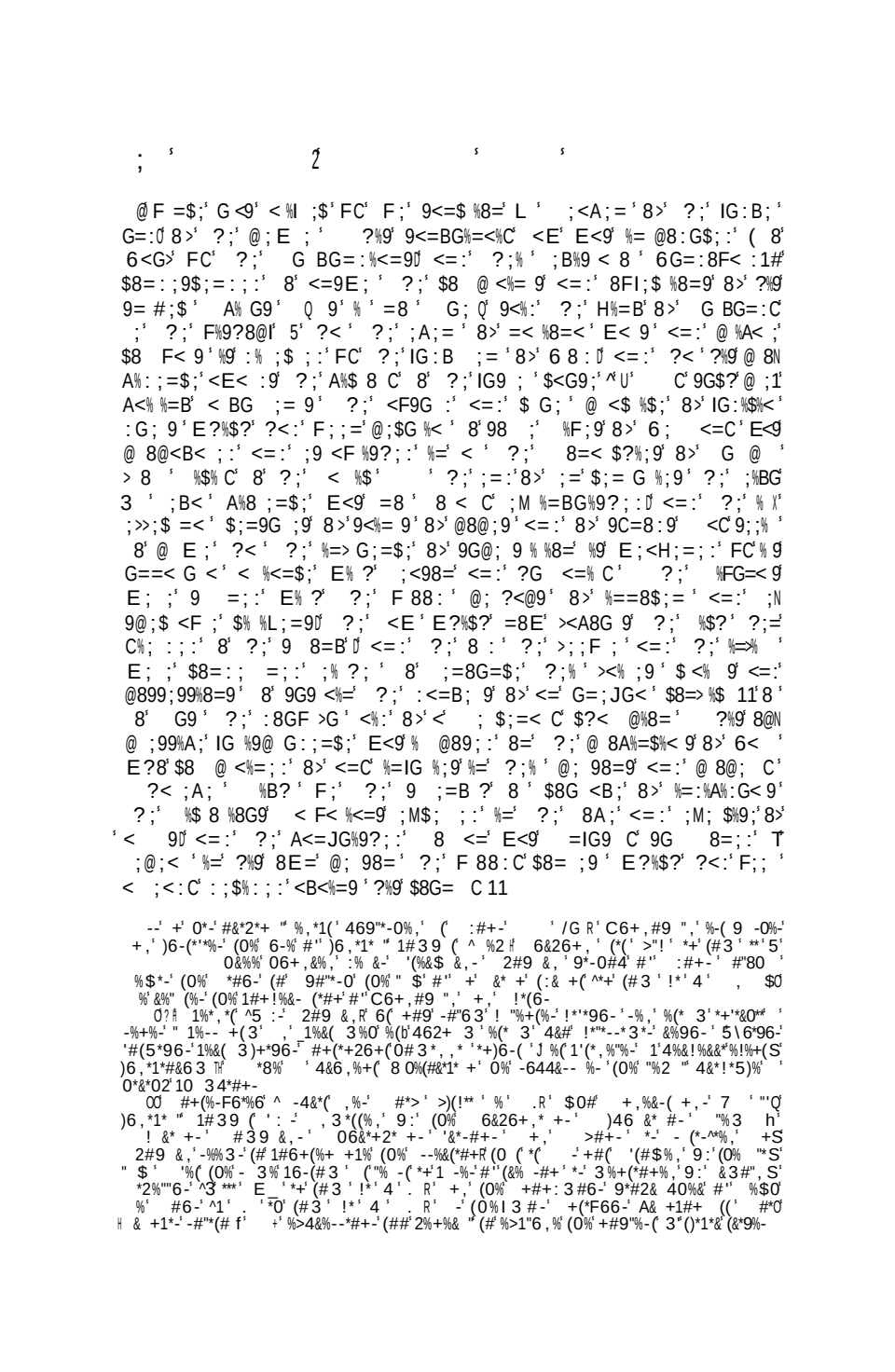
G : ; ' 8>' <' @ ;<9<= ' 8 ' <' @ %=$; ' G ' ?;' =< %8=<' %=; JG< % C' ;9 <F %9?; :' FC' ?;' <=H9 ' %=' ?; % ' $ % %=<' @ 8$; ; :%=B9 ' E<9' ?;' <9 ' %=9G ' <=:' <FG9;' 8>' $8=JG; 9 1' =' ?;' $< ' 8 ; = 9' 8>' ; B%9 < %8=' ?; C' 98 ; = C' @ 8=8G=$; :' ?< ' ?;' %>;' 8>' <' 8 <=' E<9' 8>' 9 < ; ' A< G;' ?<=' ?< ' 8>' <' < F<%%<=' % ;' & A.' <' =< ;' ; M@ ; 99%A;' 8>' ?;' 89 ' % G9 %8G9' F% ?' 8 ' : %B=% C' < 8=B' ?;' <=H9 ' E<9' <@@ ; $%< ; :' < ' ?;' 9G ' 8>' 9%M ?G= : ; :' @%; $; 9' 8>' B8 : D' E ?% ;' ?;' =8F ;' @ 8A%=$%< ' E ?8' E<9' <: % ; :' 8' ?;' H%=B%9' <F ; ' %B? ' F ;' ; B< C' = : ; ; :' < ' ?;' ; M@ ; =9 ;' 8>' ? ; ;' ?G= : ; :' @%; $; 9 ' ' E 8' ?G= : ; :' E ; ;' : ; ; ;' : 9G>>%$%; = ' >8 ' <' <=H' 8>' 8 : %=< C' $8= : % %8=D' FG ' ?;' ;<=: ' 8 <=9' E ; ;' ; M@89 ; :' 8' : %9B <$;' <=: ' : <=B ; ' FC' G' %> %=B' $8 N @ ; =9< %8=' 8>' 8=; ' ?G= : ; : ' 8 ' ; A ; =' >%> C' @%; $; 9' 8>' B8 : ' <: ' ?; 9 ;' <E9' F ; ; =' ; BG < ; :' FC' <=C' @ %=$%@ ;' 8>' ; JG% C' 8 ' ; G98= ' ?;' @GF %$' @ 8 ;$ %8=' 9?8G :' ?<A;' 9G@@ % ; :' %=' IG ' @ 8@8 %8=' ?;' E<= ' 8>' @; 98=<' 9 ; =B ?' G ' ?;' 8B%9 < 8 ' ?< :' E ; %B?; :' %=' ?;' 9$< ; ' =8 ' 8>' IG9 %$; ' FG ' 8>' @8 %$C' ?;' 899' 8>' <' 98 : %#' <B<%=9 ' ?< ' 8>' <' 9 <A;' D' ?;' ?; <:' 8>' <=' %=98 ; = ' <=: ' <@<$%8G9' < F< %<=' E<9' BG< : ; :' FC' <=' ?; <AC' >%=; ' 4 <=: ' ?;' 9 %B? ; 9 ' <%:' E<9' <>>8 : ; :' 8' ?;' 89 ' : ;>; =$; ; 99' 9GFI ; $ 9' % ;' %=9; =9%F C' <F< ; :K ?;' @ %: ;' 8>' ?;' $8=JG; 8 9' <=: ' ?;' @< %; =$; ' 8>' ?;' A<=JG%9?; :' D' <=: ' ?;' F8 : ; 9 ' $% %L ;=' E<9' <GB? ' FC' ; M@; %; =$; ' ?< ' F ;' %B? ' 9G>>; ' 8 ;' %=IG %; 9' ?<=' ?;' $8G :' %=> %$ ' 9' ?;' <==; 9' 8>' ?;' <=H9' F ;$< ;' ; 99' >; 8$%8G9 ' ?; % ' <E9' ; ' ; =: ; ; :' 8 ;' 9 ; A ; ;D' <=: ' ?;' ; 8A%=B%<=' H%=B9' < ; @ ; :' 8' % % < ;' ?;' % @< %<' %B8G ' 8>' ?;' %9%B8 ?9' <=: ' G N

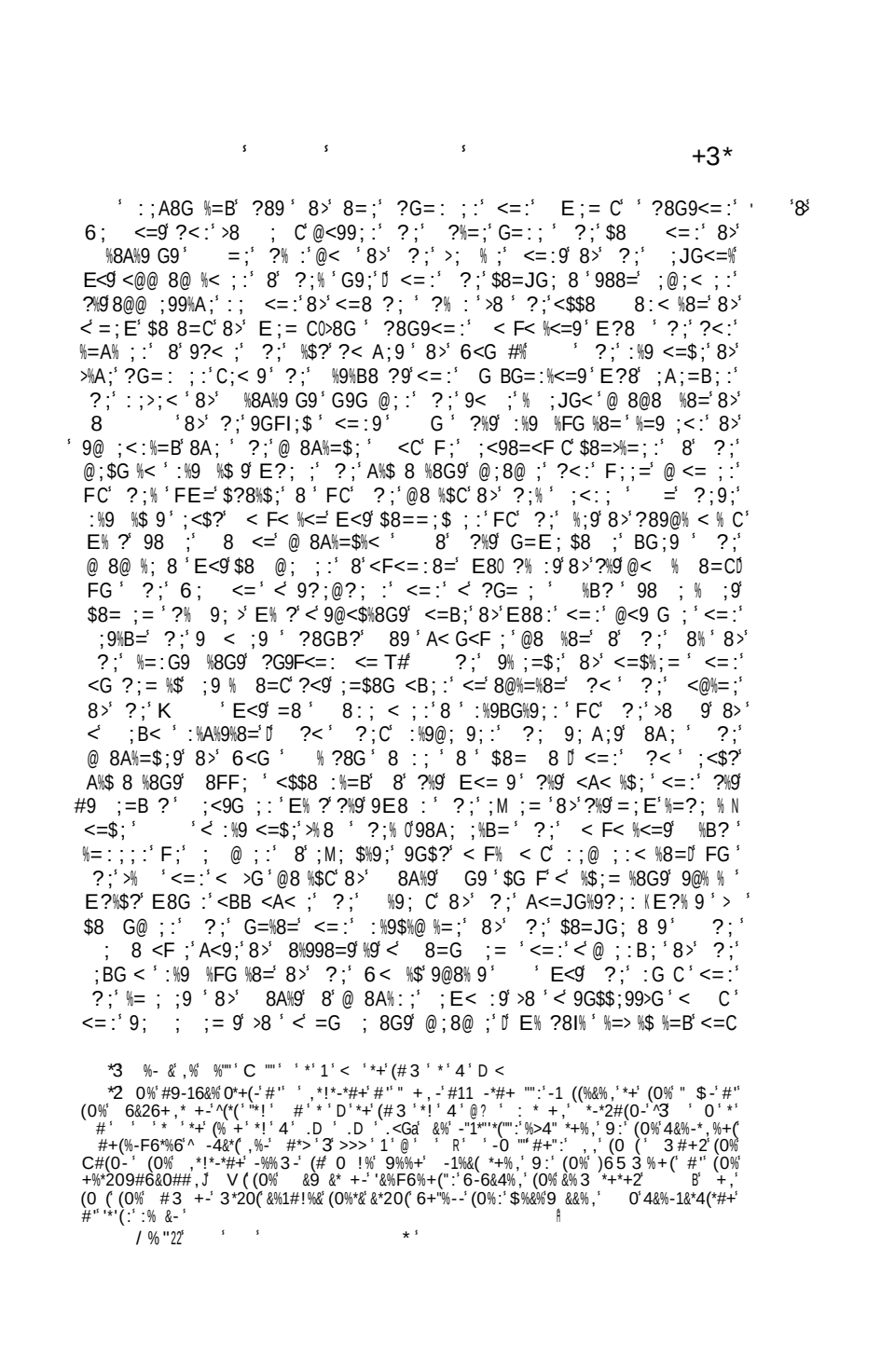
K9 0*-' 4&#4#&(*#+' *-' '*>%,' 9 :' (0% "* ' ^(*(' >"*!' '*+' (# 3 ' *!' 4 ' .@R' +,# (0% *46 &* +' ^(0' !** >*' >>>!*' *+' (# 3 ' *!' 4 ' D< @' D. R*' " $ -J 96((0% " ((%& ,#% '+#(,*-(*+26*-0' +:' ,*' '%&%+1% #'' # 3 +-' %((0% #&,%&-' #'' (0% 1"%&2: ' &% 4" 1% ' 9# !% (0% A& +8-' (0% 3 -%"!%-' +,' (0% 6&26+,* +-' +,' "%*0 ++* 9%(8%%+' (0% A& +8-' +,' (0% # 3 +-

h 0% & ' =! ' ' ! ' ' ! ' ! ' ' 6+, #69(%,":' &%4&%-%+((0% '*&-(#&,%& #'' A& +8-J 96(*(*-' ' F6%-(*#+' $ 0 5 %&' (0%*& & +8' $ -' 4%&-#+ "' #& 0%&%,*(&: ' 0% 99 ' ,% 9":' ^(# 3 '*' 4 ' <<. <.R* -' +#(,*-K 4"% -%,' (# 3 #&(*:' (0% 4&*,% #'' 9*&(0' ^ -4&*(' 3' >>*' % ' D/R' 9 :' , (*+2' (0% ' #'' A&%+10' +#9*'*(:' '&# 3' (0% &%*2+' #'' "#(*&%' ' % ' 89' 0% +('6-(*#+-' $%&% (0% 3 %3 9%&-' #'' (0% 8*+2!-' ! '#& 1# 3 *((' "%! (*#(* (#' (0% 4#-*(*#+' *-' (06-' ,%-1&*9%,' 9 :' %+ +(*6-' A#&(6+ (6-' @' 6--*(%" %2&%2*#-' *+(%& &%-*, %&% 4#(%+(%-' 1#+!*! 3' &%, ,%+-' 4&#'*%*%+(% 2& ,6 ' 0% +(&6-(*#+-' 36-' 9%' ,*-K (*+26*-0%,' '&#3' (0% ' +,' ! 0%' '*,%%-' $%&% "*-69)%1(-' $0#' 0 ,' (8%+' (0%# (0' (# (0% 8*+2' J (0% "%6,%-' $%'%' (0% 3#&% *3 4#&(+(' #'' (0% '*,%"0-' +,' (06-' ! ' (0% +(&6-(*#+-' %' '*+,' (0% "%6,%-'1#+(& -(%,'^*R' $*(0' 3 %+' #'' +# J *+'"6%+1% +,' 'Da $*(0' 4#$%&'6" %11"%-* -(*1-' 0%*& 4#-*(*#+' *+' &%2 &,' (# ' (0% 8*+2' 0 ,' +#(0*+2' (# ,# $*(0' 1# 3 3 %+, (*#+' 0%-% $0# P' 1# 3 3 %+,%,' f' (0% 3 ' -%"!%-' $%&% (%& 3 %,' (0% 8*+2!-' ' #& ' I' ! -- "-' I ' # 3 4 &%' "([' 7%6(-10% %&' --6+2-2%-10*10(%' **' * ' <. ' 88 0% #&*2*+' #'' ! -- ",# 3' 0 -' +#(0*+2' (# ,# $*(0' (0% 1# 3 *((6-' *% & +8' #'' (0% +(&6-(*#((-' 4%&- 0 "' +#(O%&%,*(&: ' 4 ' *"[' 4 ' <. G b

:G$%=B F;>8 ; ?;% %FG=< < =G F; 8> >=;=: C E% =;99;9 E?8 98 ; = C :;$ < ;: ?;% F; %;> 8 <99G <=$; ?< ? ; E<9 =8 BG% C $$8 :%=B 8 ?; E ;%B? 8> ?; $?< B; ?%9 ;B< =G F; 8> " E<9 G %@ %; 0 9;A;= C0 E8 A8%$;9 E; ; ;JG% ;: 8 <F98 A; <= %=$;=:%< C 8 <99<99%= <=: E?;= ?; $?<9 % C 8> < JG;;= 8> <=$; E<9 9G9@;$;: ? ; ; ?% E ;: B< <= =8F ;9 9E8 ; E% ?8G ?;9% < %8= ?< ?; %=><= @ %=$; ?<: F;;= <$ G< C F;B8 ;= FC ?; :;$;<9;: ?G9F<=: 1# ?; 9%= <=: 9$<=:< 8> <=%>;9 <=: > ;JG;= @; IG %;9 ;=#B;: ?; <B%9 < ;9 8 ; 8A; ?;9; :<=B; 8G9 ; @ < %8=9 <=: 8 9G@@ C ?; : ;>;$ 9 8> ?G <= ;9 % 8=C FC ?; >< 8G9 ;M@; %N ;= 9 8> >% ; <=: E< ; ?;9; ;M <8 :%=< C %< 9 E; ; 98 $<@ %$%8G9 C $8= %A;: ?< = 98 ; $<9;9 BG% <=: %==8$;=$; %= 8 ?; 9 $8G : =8 F; @ 8A; : E% ?8G ?; %= ; @89% %8= 8> < % <$; G$? % <$;9 E; ; ;<:% C @ 8A%:;: FC > <G: <=: $;: G % C ?; 89 %= %$< ; $<G9;9 E; ; :; ; %=;: FC ?%9 ;<9C <=: %=>< %F ; ; ?8:<%=;: ?; 9;= ;=$; 8> ?; <B%9 < ; 9GF %9N 9%A; C <$JG%;9$; : %= ?; IG:B ;= 8>68: 1T G ?; %< 9 FC 9%=B ; $8 F< B <:G< C 8F <%=;: 9G@; %8 $;: % <=: <G ?8 % C < 8=B < E< %H; @;8@ ; E?8 $8G : =8 F; %;A; ?< < F <A; <= : ;9; A; : 8 9G>>; 8 ?< <$8E< : : ;9; A; : 81 %A; 11 8 ? %= $%A% <=: $ % %=< @ 8$;;%=B9 ?; @ <%= %>> 8 <$$G9; ?; : ;>;=: ; 8 ;A;= ?; E% =;99 E ; ; ;MN @89; : 8 8 < $?< ;=B; > 8 ?; <= <B8=%9 E?8 E<9 : ;9 % G ; 8> ;B< @ 88>9 <=: % E<9 %=$G F;= 8= ?; ;% ?; 8 : ;9; ?;% $<G9; 8 @GF %$ C 8 <%= <%= ?;% ?8=8G %= ?; %9 9 8> F< ; ?; C >8GB? ;% ?; 8= >88 8 8= ?8 9;F<$H <$$8 :% 8 ?; $G9 8 8> ?;% =< %8= 4 <=: ?; : ;$%9%8= 8> ?; 9%A8

C&%2#& 6&#+ 3 !*** 1 *+ (#&+ ** 4 < #&((%56*%6 9-%&!%-^ -4&*(,%- "5*> >>!*** 1 <R (0 ((0% "*1 $, *, +#(,(+*((0%-% ! , -# 0+*!%&- -: %-(9"*-0%, *+ (0% &9 &*1 1#,%- %((0*- 9-16&% ##+1690*% ^A&%,%5+,*-R $0# 9%1 3% (9% $*'%# # (0% 2& +M -#+ # "#!*- 36-(0 !%'#""#$%, (0% "*1 $ 5 6& (# *+ (0% +(*F6*(*%- # (": 0 - 2*!%+ ($# *--%&((*#+- >>>!*)* >>>)> R #+ (0%?! E Q ($ - %>4%1(%, (0 ($#6", +#(96&+ (0% *++#1%+(J +, (0 ((0% 46&% %%3%+(# 7 $#(*", +#(""#$ (0% 26*":((# -*+8 *+(# *(-9#-#)+ H -# #+(%-F6*%6 ^5 4&*(,%- #*> 3 >>!*** ' @R 0 - 1#+,%-1%+,%, (# %>4"5 +, %>16-% I" 3 +* &% ,% 4%+-%& ,% 0#- 4, &%- f #+ (0% -69)%1(#)6, *1* # 1#*0 9 (- % '#""#$- (0*- -(& +2% *+-(*(6(*#+ '&# 3 (0% 2% # C66, #9 , (# (0 (# ("% $ *-J +, (0% 4O*"#-#40%&*- -# 3 %(* 3 %- "#-(*+ (0% "%2 # +(*F6 &* + + % 3#& 9"% , 65 (*>'" 0 4%""%^ S DGR ()%'#&% (0% % 3 4%&5 %$*-(0% *#6- 0*- 9*#2& 40%& #9-%&!%- -%16+, 6 3 "%2% 3 4&#4(* 3 6(4#(% 56* 6(%&F6% C#(06-%& (%F6%-(&* 462+, M 4&#%"*#0 1#+2&% 6-%-(^ *(6, **1 << *+ _ #6F6%(b (# 0 !* 4 G<R '%&&+#", 6- *2%""6-3 *"" /5< D *N (#+! !* 4 . <GR $0# ,%-1&*9%- (+%L,6& ,*4*&%-(0% D *2$+2'#+ 0#&-%9 18 $0*10 $ - 6+8+#$F(, (0% '& 08-





]E<= 8=' 8 ' 9G@; > G8G9' %=IG %;9' 8=' ?;' 8C<' $< ?8 %$9' 8>' 6<G ' ?;' < @ ;'>G=: ' E?%$?' ?;' %B? ' <E>G C'<$JG% ; '8>' ?;' @; %<' @< % 8=C' A<$<= ' <=:9' <=:' 68 ?%$' G9G @< %8=9' E8G :' :% %=%9?' ?;' $ G; ' =;$;99% C' 8>' 9;%LG ;' <=:' $8=>%9$< %8=' D' <=:' ?;' ?G F ;' @ 8A%=$%< 9' E8G :' 8 ;' @< %;= C' <$JG%;9$;' %=' ?;' ;JG<' <=:' ;BG <' :%9 %FG %8=' 8>' ?;%' 899 TT

8 <%=' <=:' F; =;>%$;9' 8>' ?;:>8 I %#<=9

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$' (' *-'-*+26" & %+#620' (0 (' (0%' 4&%-*,%+(' ,%' #+(%-1) *% '^ -4&*(' ,%-' #*&' ' '1' @%' +,' (0%' 99%',%' 9":'^ 9-%&! '(*#+-' (#3' *' 4' U' R' 2&%%' *+' (0'-' -(& +2%' -644#-*(*#+' #" &9*(& &:' +,' 4&*! (% & 4*+%' 0%' 1#6+(' ,%' 56" *+!*"*%&-' ^ ((' ,%" 'A& +1%' (# 3' *' 4' ' 5<R' 0%$-' ' -(&#+2' +,%&-(+,*+2' (0&#620' ' 1"#6,' #" '*2+#& +1%' +,' 4&%)6,*1%

$ -%%' (0% &6-(*1'%,*1(' #&' & (0%&'1#,%' #" 0 &"%3 5%' $0*10' 1#+(*+-' -%!%+-' ,*-(*+1(' +,' 3*+6(% &%26" (*#+-'#"'(0 ('2&% (' 3#+ &10'^3' (# *' !' 4' /Z -@R' % &%F6*&%-' +' 11#6+(' #"'(0%'0#&+-' +,' 8*+-'#" 3%2 (-' #$-' 0*-' '*-0' ('9%'-#",' +,'1 &%'6"":',*&%1(-' (0 (' (0%" &2%&'!*"" -' S1 = M' 0 "" 3 *+(' *+' +% (6+,&1,' 0%+-' +,' (0*&(:'2%%-%J +,' (0% 3 ""%&! I $ E M' '*'(:' 0%+-' +,' ($%"!%2%%-% 9* #+' ^,% % 7*4*#3 (*1 R' 0 -' *+!%N*2 (%,' (0%' + 3%-' (0%' +6 3 9%&' +,' (0% *(6 (*#+' #"'(0% %&#!*+2"* +' !*"" -

> 8 ' ?;' %=> G;=$;' 8>' ?%9' %F; < % C''', V%' ?%9' :;@;=:;=' ;=A%;' E<9'B <:G< C'<F8%9?;:T# FC' ?;'%=:;@;=:;=' <=:' <@<$%8G9'=8F;9' 8>' <=$;' E?8';9 <F%9?;:' ?;' @; @; G<' @ 8@; C'<=:'?; ;:% < C' 9G$$;99%8='8>' ?;%' F;=;>%$;9'P <' ;A8 G %8='9< G < C' 8' ?;' ;< ?' E?%$?' ?<:' F;;=' %=IG ;:' 8' =;B ;$;:' FC'% 9'@ ;$< %8G9' <9 ;9 TT ;9%:;9' ?;9;' 8C<' <=:' F;=;>$%< C' ;9 < ;9' <' < B;' @ 8@8 %8=' ?<:' F;;=' <99%B=;:' %=' ?;':%A%9%8=' 8>' 6<G' 8>' ' <=:' ' <=:9U ?;C' E; ;' ;M; @' > 8 ' %FG ;' <=:' ?;' < %$ <=:9' E; ;' ;JG< C' 9?< ;:' < 8=B' ?;' < ;' :;9$;=:<= 9' 8>' ?;' <=H91T# =' ?;' F 88:C' :%9$8 :' <=:' 9% ;=' :;$<C' 8>' ?;' ; 8A%=B%<=' %A(;' %=;' <' =;E'8 :;' ->' C <= 9' < 89;' %=' ?;' @ 8A%=$;9' E?8' G=:; f U 1111U' ?;' <@@; < %8=' 8>' ' 8' 8 :9' G9G @;:' <' %B? ' 8' B8A;% ' <=:' <' %$;=$;' 8' 8@@ ;99' ?;' 9GFI;$ 9' 8>' ?;%' @;$G %<' ; % 8 C ?;%' < F% %8=' %B? ' F;' $?;$H;:' FC' ?;' ?89 %;' ;9%9 <=$;' 8>' <=' ;JG< P FG' ?;' <E9' E; ;' ;M %=BG%9?;:<=:' % ;' 9<$ %;B%8G9' < F< %<=9' E?8' :< ;:' 8' @ 8A8H;' ?;' A;=B;<=$;' 8>' <' 9<%=' 8' F%9?8@ T1' E8G :'9; :8 ' ;9@;$' ?;' <=: < H9' 8>' <' @ 8><=;' <=:' :;>;=$; ;99' =;%B?F8G ' ?;' $8 $ ' 8' @GF %$' %B? 9' 8>' =< G ;' 9G$?' <9' ?;C' ?<:' < E<C9' F;=' :;; ;:' FC' ?;' 8 <=' IG %9N @ G:;=$;#' E; ;' 9;A; ;C' ;9 <%=;:' FC' ?;' 6; <=' $8=JG; 8 9' E?89;' < G9; ;= ' 8' < ?;' @<99%8=' E<9' ?;' ;M; $%9;' 8>' ?G= %=B ?;' A<BG;' :8 %=%8=' E?%$?' , ' ?<9' <99G ;:' 8A; ' ?;' E% :' %=?<F% <= 9' 8>' ?;' ;< ?' ?;'<% ' <=:' ?;' E< ; 9' E<9' $8=>%=;:' 8' 98 ;' >8 G=< ;' %=:%A%:G< 9' 8>' ?;' ?G <=' 9@;$%;9' 6<G' E<9' <B<%=' 8A;%9@ ;<:' % ?' E88:9' <=:' ?;' <=% < 9' E?8' E; ;' ;9; A;:' >8 ' ?;' G9;' 8 '@ ;<9G ;' 8>' ?;' 8 :' %B? ' <A<B;' E% ?' % @G=% C' ?;' >%; :' 8>' ?%' %=:G9 %8G9' A<99< 9' ?;' $?<9;' E<9' ?;' 9<$;:' @ %A% ;B;' 8>' ?;' =8F ;9' <=:' ?;%' :8 ;9 %$' 9; A<= 9

' 0VA&#3' '4 -- 2%'#'' (0%' 6&26+,* +'" $' ^(*(' *' #' .' *+' (#+"' *!' 4' 0/@R' *(' *-' %!*,%+(' (0 (' ',%-%&!*+2' -#+' 3*20(' %>4%1(' (#' 0#",' (0%' " +,-' $0*10' 0*-' ' (0%&' 0 ,' &%1%*!%,' '&#3' (0%' &#: " 9#60(:' #'' C6+,#9 ",' ' 0%' 6&26+,* +-' $#6",' '*&3":' +* *+(*+' (0%*&' 4&*!*"%2%' +,' (0%*&' %> 34"%' 3*20(' %+1#6& 2%' (0% 9%+%'*1* &*%-' #'' & +1%

$' 0%' &%!#"6(*#+-' #'' (0%' 9%+%'*1%-' +,' '*%'-' &%' 1"% &":' '*>%,' 9:' (0%' 995',%' 9": ' ()*-' 116& (%',*-(*+1(*#+' #'' ' 2*!%-' 0*3' ' " %&*(' (# $*50' %!%+' #+(%-F6*%6'*-' ' -(& +2%&' ;

$' %%',*%' "*1' " $' ^(*(' >**' *+' (#F*' V!' 4' > QU 0%' (- 2*+' +,' + (6&%' #'' (0%-%' "*1' " +,-' $0*10' *+' (*3%-' #'' *2+#& +1%' $%&% 4%&'%1(":' 6+,%&-(##,' +#$' 4%&4"%>' #6(' 3#-(" % &+%,' +,'- 2 1*#6-' %&*(*%-'

0M +:' #'' (0% ($# 06+,&%,' +,' -*>' 3*& 1"%-' #'' (' &(*+' ^C&%2' 6&#+' *+' >**+'* *9"*#(0%1*' 5(& 3' (#3' >*' 4' /<Dc' $%&% &%4% (%5:' 4%&'9'0*%,' (#' 46+*-0' - 1&*"%2%' 6,*(%' 0-%1'#3+%-' ^%>1" *3-' (0%' 9*-0#4' #'' #6&-R' 4#(%-((%3' 0 9%+(%-' '(%&' &%" (*+2' 0#$' -#3%' 0#&-%-' &6+' 3 ,' (0 (' 0 ,' 9%%+' (6&+%,' *+(#' ' - 1&%,' 3% ,#$' +' 0

%*+%1' "%3%+(' 6&' C$3 +' 3*('4' -' #' U

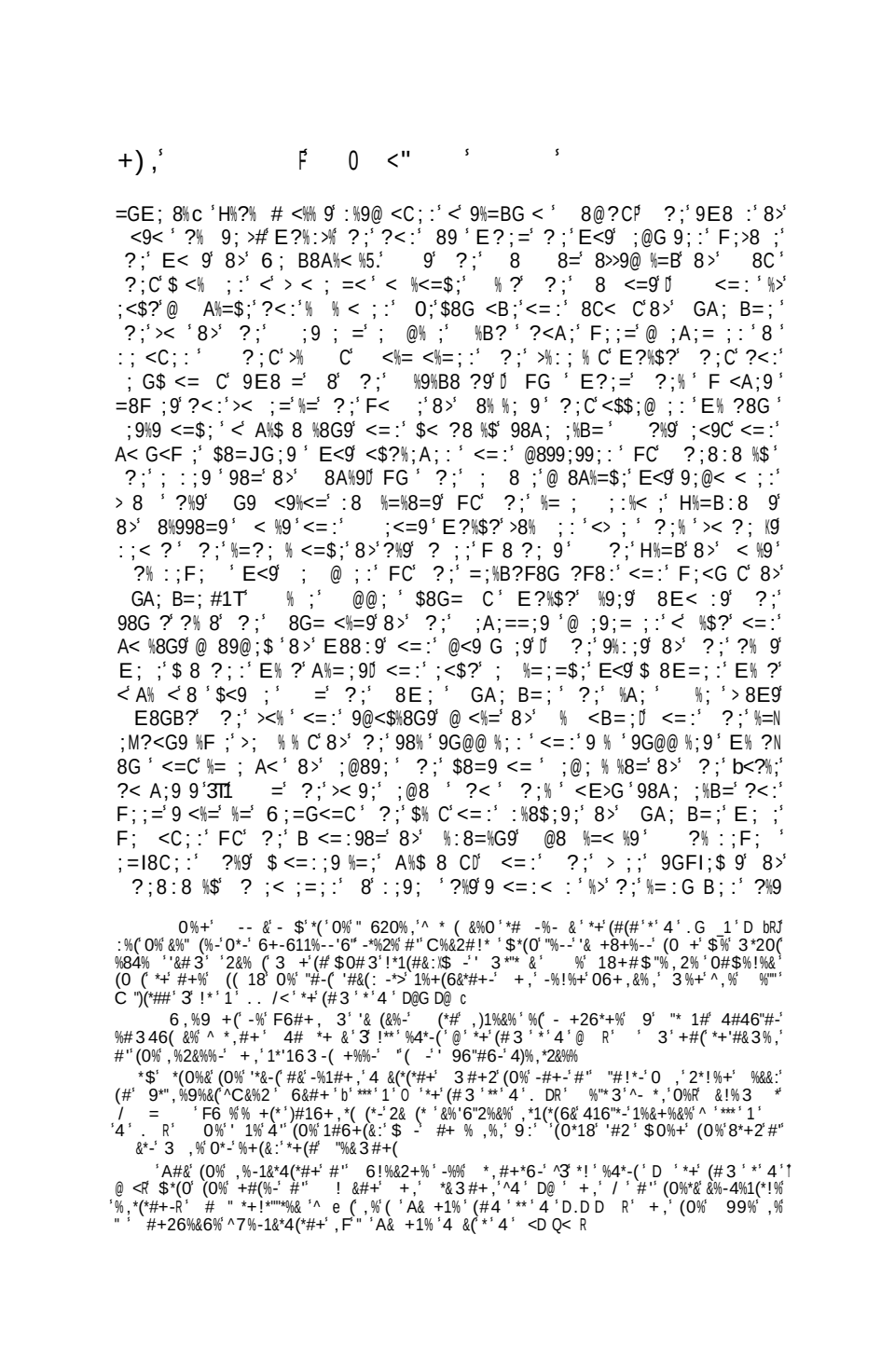
;F;%<=' <=9B ;998 9' E; ;' ;B< C' $?<9 %9;:' E% ?' 9 %@;9' <=:' % @ %98= ;= 0 F= ' %=' <=' <B;' E?%$?' <: % ;:' <' 9 %B?' $8 N @89% %8=' >8 ' ?;' %>;' 8>' <' $% %L;='% ' E<9' <' $<@% <' $ % ;' 8' :;9 8C' <' 9 <B' 8 ' <' E% :' FG ' % ?%=' ?;' @ ;$%=$ 9' 8>' ?;' 8C<' >8 ;9 9 #1

;>98<< $$8 :%=B' 8' ?;' <M% 9' 8>' <=$%;= ' E< ' ?;' $8=JG; 8 ' F;N $< ;' ?;' <E>G ' <9 ; ' 8>' ?;' ;=; C' E?8 ' ?;' ?<:' 9GF:G;:' <=:' 9@< ;:0 <=:' ?;' > G% >G ' $<G9;' 8>' @; 98=<' 9 <A; C' ?%$?' ?<:' F;;=' < 89 ' 9G@@ ;99;:' FC' ?;' @;<$;>G ' 98A; ;%B= C' 8>' 8 ;' <9' <B<%=' ;A%A;:' <=:' G %@ %;:' FC' ?;' @; @; G<' ?89N % % %;9' 8>' ?;' =:;@;=:;=' < F< %<=9' ?;' 6 8 ?' ?;' G BG=N :%<=' 8 ' ?;' <=H' E?8' ; G =;:' > 8 ' <' 9G$$;99>G ' ;M@;:% %8=' : <BB;:' <> ; '?% ' <' 8=B' <%=' 8>' 9?;;@' 8>' 8M;='<=:' 8>' ?G <=' $<@ %A;9' E?8 ' ?;' ;< ;:' E% ?' ?;' 9< ;' F G <' $8= ; @ ' ?;' C8G ?9' 8>' <=' ; ;B<=' >8 ' <=:' %=B;=G8G9' <9@;$' E; ;' 9;' <@< ' >8 ' ?;' :8 ;9 %$' 9; A%$;0' <' :8GF >G ' 9% G< %8=' E?%$?' < ; =< ;Z\# ;M@89;:' ?; ' 8' ?;' >8A8G <F ;' 8 ' $ G;' % @G 9;' 8>' @<99%8=' ?;' G9;>G ' ;$?<=%$9' <=:' 9; A<= 9' R9 % ?9' $< @;= ; 9' <% 8 9' 9?8; <H; 9' $88H9' B< :;=; 9' :C; 9' <=:' E8 H ;=' %=' B8 :' <=:' 9% A; ' ($ S' ; @ 8C;:' ?;' 9H% ' >8 ' ?;' G9;' 8 ' @ 8>% ' 8>' ?;% ' <9 ; ' G ' ?;' 8 <=' $<@ %A;9' E?8' E; ;' :;9 % G ;' 8>'< ' FG ' $<@<F ;' 8>' <F8G ' E; ;' $8=:; =;:' E% ?8G ' ;B< :' 8' ?;% ' >8 ; ' <=H' 8' ;=:' ?;' $< ;' <=:' $G %A< ;' ?;' <=:9' 8>' ?;' < F< %<=9' ?;' =G F;' 8>' ?;' ?; ;:% < C' F8=:9 ;=' E?8' E; ;' < <$?;:' 8' ?;' 6< %$' ;9 < ;9' E<9' $8= %=G< C' %=$;<9;:' FC' =;E' 9G@@ %;9' b <=:' ?;' 9; A% ;' @;8@ ;' <$$8 :%=B' 8' ?;' 9% G<N %8=' <=:' ; @; ' 8>' ?;% ' 8 :9' E<9' 98 ; % ;9' <%9;:' FC' @ ;$< %N 8G9' %=:G B;=$;' <=:' 8 ;' > ;JG;= C' :;@ ;99;:' FC' $<@ %$%8G9' :;9@8 %9 Z11' =' <F98 G ;' @8E; ' 8>' %>;' <=:' :;< ?' E<9' ;M; $%9;:

; 4+ -' 9*-0#4' #'' &"% +-' ' * ' *!%' *-(' *((%& &* ' 4' . . /R' 1%+-6&%-'(0%' '(:& ++:'#'' (0% +#9"%-' &#' '%&*-' F6 -'16& '0# 3*+6 3' +#+' "6*(' -%,' 4%+-' *+' 1# 3 3 6+% 3 6&("*96-' ,' 6(%+,6 3' 1#+1%--*('4 64%&%-' 4#(%+(*#&*96-' -4#"* +(6&' '* 2%"" +(6&' %&2 -(6**-' ,%(&6,++(6&' %(' 3 6"(' 5*-Q 4 (*6+(6&' #1' %+*3' F6# ' 1)6+(' ' ! '-%' 1%&%)6-(%' 4#---%' 1#+(%+, +(' 7%' +-(*(6(*#+m' *1#&6 3 '3' **' 1' << ' 46,' 9#3 --8*' 7*-1*4"*+%',%' T 5"*-%' (# 3 ' ***' 4' <.E 3' +' '3 %&%' -6-4*1*#+' 064,#' '10 3 9%&" *+' #" C#+(& +' 8*+2' #'' 6&26+,:' $ -'-(#+%,'(#' ,% (0' ^C&%2' 6&4+' 3' >' 1' G' *+' (# 3 ' **' 4' < R' #0+' #'' "*-K 96&:'^ #"*1& ('R' *' '' .R --%&(-' (0% &*20(-' #'' + (6&%' +,' %>4#-%-' (0% 1&6%" 4& 1(*1%' #'' (0% ($%"'(0' 1%+(6&:' %%' %*+%11*6-' "% 3 ' 6&' C%& 3 ' 3' **' 4' * ' #' (I !0

0%'16-(# 3' #'' %+-" !*+2' 4&*-#+%&-' #'' $ &' $ -' (#("":' 5(*+26*-0%,' *+' (0% (9*&(%%'((0' 1%+(6&:' 9:' (0% 4&%! *"*+2' *+'"6%+1% #" 0&*-(* +*(:J 96(' *(' 3*20(9% 4&#!%,' '&# 3' ')(F6%+(' 4 -- 2%-' #'' C&%2#&:' #'' #6&-' E1' (0 (' *(' $ -' 4& 1(*-%,' $*(0#6(' 1%+-6&% 6+,%&' (0% %&#!*+3 +' & 1%J +,'%!%+' C&#(*6-' 0*3-%"'^, ' 6&% %""# %(' 1*-' 3' ***' 1' @R' -' $%"" -' 0*-'1# 3 3%+((#& (9%:& 1' 0 !%" 9#6&%,'(#' &%1#+1*"%*('$*(0'(0%" $-'#'"+ (6&%' +,'&% -#+

0%'-((%' 4&#'%--*#+-' E1' #'' (0% C%& 3 +' ("* +' +,' C ""*1'-" !%-',6&*+2' (0% 3*,,"%' 2%-' &%'%>4" *+%,'9:' %*+%1 *6-'^ "% 3 %+('6&' C%& 3 '3'*' #'D .@R' 6 3 +' ^')*--%&(('>*!' >! ' 46% +2%'^C"#--' -69'!#1%' E 3 R' +,'(0%' 99,',% 9":'^ 9-%&! (*#0-'(# 3 '*('4# d' 4' D<@'E1 R



@ %A< ; ;9;= ;= E?% ; ?; =< %8= E<9 ;=B<B; %= ?; G N
BG=:%<= E< G ?; <=H9 8> G9 <9%< 988= C%; :;: 8 ?;
@; 9G<9%A; ; 8JG;=$; 8> ?;% H%=B 5 8 8E ; U 9<%: ?;8
:8 %$ 5 %= 8 GA; B=; P E% ;<: C8G %= 8 < @ 8A%=$; E?; ;
C8G <C <$JG% ; B8 : 9% A; 9 <A;9 $< ; <=: @ ;$%8G9 <@@< ;
8 ?; >G ;M ;= 8> C8G E%9?;9 ;@;< C @ 8 %9; D B%A;
C8G ?; @;8@ ; <=: ?;% E;< ? <9 C8G @ ;CD <=: C8G <C
<=9@8 ?; < @ ;<9G ; %= 8 C8G 8E= $8G= C U C ?;
;M;$G %8= 8> ?%9 @ 8 %9; ?;8:8 % IG9 C >8 >;% ;: ?; < ;B%N
<=$; 8> < @;8@ ; E?8 ?; :;A8 ;: 8 :;9 G$ %8= 9 %9 88@9
;%=>8 $;: FC ?; >%; $;9 <F< %<=9 8> 6; <=C #Z1 9@ ;<:
:;98 < %8= 8A; ?; > G% >G ><$; 8> GA; B=;D <=: %1d @ <$;9
8= C < 9 8=B $<9 ; <=: < ?8 C 9? %=; E;I ; 9<A;: 8 ;:;; ;:#
> 8 ?;% %$;= %8G9 >%% C ?; $<9 ; 8> ? ; 8 %<$ # E<9 ;< ;:
8= < 8> C 8$H E?%$? 89; % ?G=: ;: >; <F8A; ?; 9G ($; 8>
?;@ <%= D <=: < < B; ;9; A8% 8> > ;9? E< ; <9 %=$ 89;: E% ?
98 ; < <F ; <=:9 E% ?%= ?; $% $; 8> % 9 >8 %%$< %8=9 ?;
<=H9 F;?; : E% ? ;=AC <=: :;9@<% ?%9 % @ ;B=<F ; >8 ;99D
FG ?;C 9G @ %9;: @< C 8> >%> C 9 <BB ; 9D <=: <9 ?;C E;
8@@ ;99;: FC ?; =G F; 8> ?;% $<@ %A;9 ?;C >%M;: < <
%> %=B <=98 ?; < ; =< %A; 8> %; 8 :;< ? >8 ?;9; E ; $?;:D
A%$ % 9 E?8 ?; $ G; < F< %<=9 E; ; @ ; ;: 8 <99<$;
8= ?; ;>G9< 8> ?; B< %98= =8 ?; :; <$? ;= @;=; < ;:
<9 >< <9 %A<9 8 %8G:; E?; ; ?; %=?<F% <= 9 E% ? ?;%
A< G<F ; ;>>;$ 9 ?<: <H;= ;>GB; %= ?; 9<=$ G< C 8> WG %<=
?;:88 9 8> ?; $?G $? ;9%9;: ?; <99<G D FG < : < %<B 98 :%;
;= ; ;: ? 8GB? < E%=:8E 8> ?; $?8% <=: 8@;=;: < @<99<B; 8
$8 @<=%8=9 ?; $; BC <=: @;8@ ; ?; 9<$;:D <=: ?;
@ 8><=; 9@8% 9 E; ; G:; C 8 > 8 ?; < < D <=: ?; 9<$ %N
;B%8G9 :%A%9%8= E<9 <:; < < 9= <0 :%9 <=$; > 8 ?; 8E= 8>
%8G:; G ?%9 <$ 8> % @%; C E<9 9;A; ; C $?<9 %9;: FC ?;
:;A8G 98= 8> 8A%9 ; @G=%9?;: E% ? :;< ? ?; 89 < 8#
$%8G9 8>>;=:; 94 ;> ?;% 9;$; <$$8 @ %$;9 8 ?; A;=B;<=$;
8> WG %<=P ; <9;: ?; $<@ %A;9D ;9 8 ;: ?; @ G=:; D <=:

+# A6&#&%3 2%+(*6 3 F6 - , %6"(%&*#&% 0%+ 3 +*- 4 &(% %+% +(64%& &4 +#+
4#(%& (^C&%2 6&#+ 3 *! 1 /G *+(#3 ** DD a $ - 0(%%>16-%#" +#(0%&(+2 #"
6-(& -* R /@.R '#& (0%& ! 2%- $0*10 0*-(& #4- 1#3 3*((%, *+ (0%+%*209#6&K
0##, I#" &*-
?

+ A&#+((0%+ 3% +, -(6 (*#+ (0% %+%,*1(*+%%,*(#&- #" C&%2#&:#" #6&-
^*+(#$ ** 4 Dc 0 !% *>%, (0*- *#&(&%-- (4" 1%+ 3%, 1 = ($#
3*"%- &#3 6+ 1 *+ (0% 44%& 6!%&2+% 0 -(%" &(0 1 *+,%4 &(3%+(
+(" " (0*-,%-1&*4(*1 * 3(& +-" (% . -*" &% , 4 (0%($#4&%4 *
(*#+- &% 4%&4%(#"":1#+'#6+,%, 9:C&%2 *: #& 0*Z(& +-1&*9%&-J 0, (0%-%+-%
360("$:-,%1*,% (:& *-&%26" &":6-%, *#&(& 9:C&%2#&:c

;M ;=:.:' ?;' %B? 9' 8>'9<=$ G< C' >%A;' % ;9' 8G=:' ?;' 9;@G $? ; ,8' ?;'?8 C' < C ?#'

;>8 ;' ?;' G9 <9%<=' < C' ; ;< ;:' > 8 ' GA; B=;' ?;80' ':8 %$' ;M<$;:' 98 ;' @ ;:B;9' 8>' ?;' >G G ;' 8C< C' 8>' <' @;8@ ;' E?89;'IG9 ' ?< ;:' $8G :' F;' ;9 <%=;:' 8= C' ['] ?;% ' >;< ' ' 9; ;$ ' F<=:' 8>'=8F ;' C8G ?9 ' ?;' 98=9' 8>' ?;' @ %=$%@< '9;=< 8 9 ' <9' :; %A; ;:' 8' ?;' $8=JG; 8 ' <9' ?;' ?89 <B;9' 8>' ?;' ><% ?' 8>' ?% :;F; ' <=:' 8>' ?;% ' $8G= C ;=' =' ?;' >% 9 ' G 8G ' 8>' E< ' 8 ' $8=9@% <$C ' ?89;' BG% ;99' C8G ?9' E; ;' ;:G$;:' 8' <' 9 < ;' 8>' 9; A% G:;I' <=:' 8=;' 8>' ?; ' < G9 #11' E?89;' <:A;=0' G ;9' < ;' %=<8 ;' @< %$G < C' ; < ;:' H;@ ' ?%9' <9 ; K9' ?8 9;9' %=' ?;' :%8$;9;'8>' ;A;9' > ; '<'@<%=>G '9;< $?'?;'E<9' :%9$8A; ;:' %=' ?%9' G=E8 ?C' 8$$G@< %8=' FC' ?;' ; %99< %;9' 8>' ?%9' B <=:N >< ?; ' 6 ;B8 C' F%9?8@' 8>' <=B ;9I FG ' ?%9' 8>>; 9' 8>' <=98 ' ; ;' 9 ; = C' ;I;$;:' FC' ?;' <A< %$;' 8>' ?;' < F< %<=' E?8' ;JG% ;:K<=' ;M8 F% <= '9G '8>' ;='@8G=:9' 8>'B8 :'>8 ' ?;'> ;;:8 ' 8>'?%9' =8F ;'$<@ %A; ' %9' :; %A; <=$;'E<9' ;>>;$;:'FC' ?;'?< :C' 9 < <B; ' 8>' ;8 ' <' 9 <A;' F; 8=B%=B' 8' ?;' H% $?;=9' 8>' ?;' F%9?8@' 8>' <=B ;9 %' =' G=H=8E=' <B;= ' ;<9+C' %= 8:G$;:'?% ' %= 8' ?;' 9< ;' >< % C' ?;' < F< %<=' @G $?<9;:' ;8' >8 ' ?;' @ %$;' 8>' E; A;' @%;$;9' 8>'B8 :D' <=:' E<9' @ ;<9;:' 8' ;< ' ?< ' ?;' E<9' :;;@ C' 9H% ;:' %=' ?;' GMG C' 8>e%=' ;@%9$8@<' <F ; ' 5' ;M ' G=:<C U' <%:' ?;' <=H ' 9?< ' %=A% ;' C' =;%B?F8G 9' <=:' H%=9 ;=' M; ' ?C' < ' <=:' >8 $;' ?; ' 8' $8=>;99' ?< ' ?;C' ?<A;' =;A; '9;;='8 ' <9 ;:'9G$?' <=' ;= ; <%= ;= ' ;A;=' %=' ?;' H%=BK9' ?8G9; U' ;8' <99G ;:' ?% ' ?< ' %>' ?;' E8G :' @ 8A%:;' <' 9G>>%$%;=' JG<= % C' 8>' @8G C' ?%9' E%9?;9' 9?8G :' F;' 9< %9>%;:' ?;' <9 ; ' E?8' < ;#C' <9@% ;:' 8' ?;' ; % ' 8>' ; ;B<= ' ?89@% < % C' <99G ;:' <9' ?%9' 8%E=' ?;' @ <%9;' E?%$?' ?;' A8 <$%8G9

+-' %%'(0%-%'&%!#"6(*#+-' &(,'$ &-'#'' 6!%&2+%'*+'C&%2#&:'#'' #6&-'^3' **' 1'<@' *+' (#3'**' 4' <' +,' ' ***' 1' ' D' <' 4' ' D',%' *& 16"*-' (' 6"* +' 1' <' *+' (#3'**' 4' . R' %'&%F6%+(":'9%(& :-'0*-'%>(& #&,*+ &:' ((%+(*#+' (#'0*-'+ (*!%' 1#6+(&:

0-' 0%'-(#&:'#'' ((*+-'*-'&%" (%,'0:'C&%2#&:'6'' #6&-'^3'*+'1' / '*+ (#3'**' 4' < /R' *-'%,*(#&'(0% . '+*+ &('1#+'#6+,-'(0*-' (("6-'$0#'$ -'Z' :#6(0' '*+'(0%:% &'/<D'$*(0' '&*%+,'#'' *,#+*6'#'' (0%- 3% + 3%'$0#'$ -' 1#6+(' #'' 6(6+'*'(:'#&I *>(:':% &-'9%'#&%' 610' +' %&&#&'$0*10' 1 ++#(' 9%'*3K 46(%,'(#*2+#& +1%'*-'%>16-%,'*+'-#3%',%2&%%'9:'*(-'# +' 3 2+*(6,%

9!0 0*'C&%2#&:'(0%'2& (2& +,'(0%&'#''C&%2#&:'#'' #6&-''*+'(#3'**'4' @' ? .G' "*!%,'+*+%(:'$# :% &-J'#''$0*10' 0% 4 --%,''#&(:' -' 1#6+('#'' 6(6+' +,' (0*&(:($# -' 9*-0#4'#'' +2&%-' 11#&,*+2' (#'(0% 4 %(A#&(6+ (6-'0%',*-4" :%,' %F6 '' 3%&*('*+'(0%-%',*''%&%+(' -((*#+-

#9*"*-' 0(*F6'# ,%16&&%+-' 4&#"%' 4 &%+(63

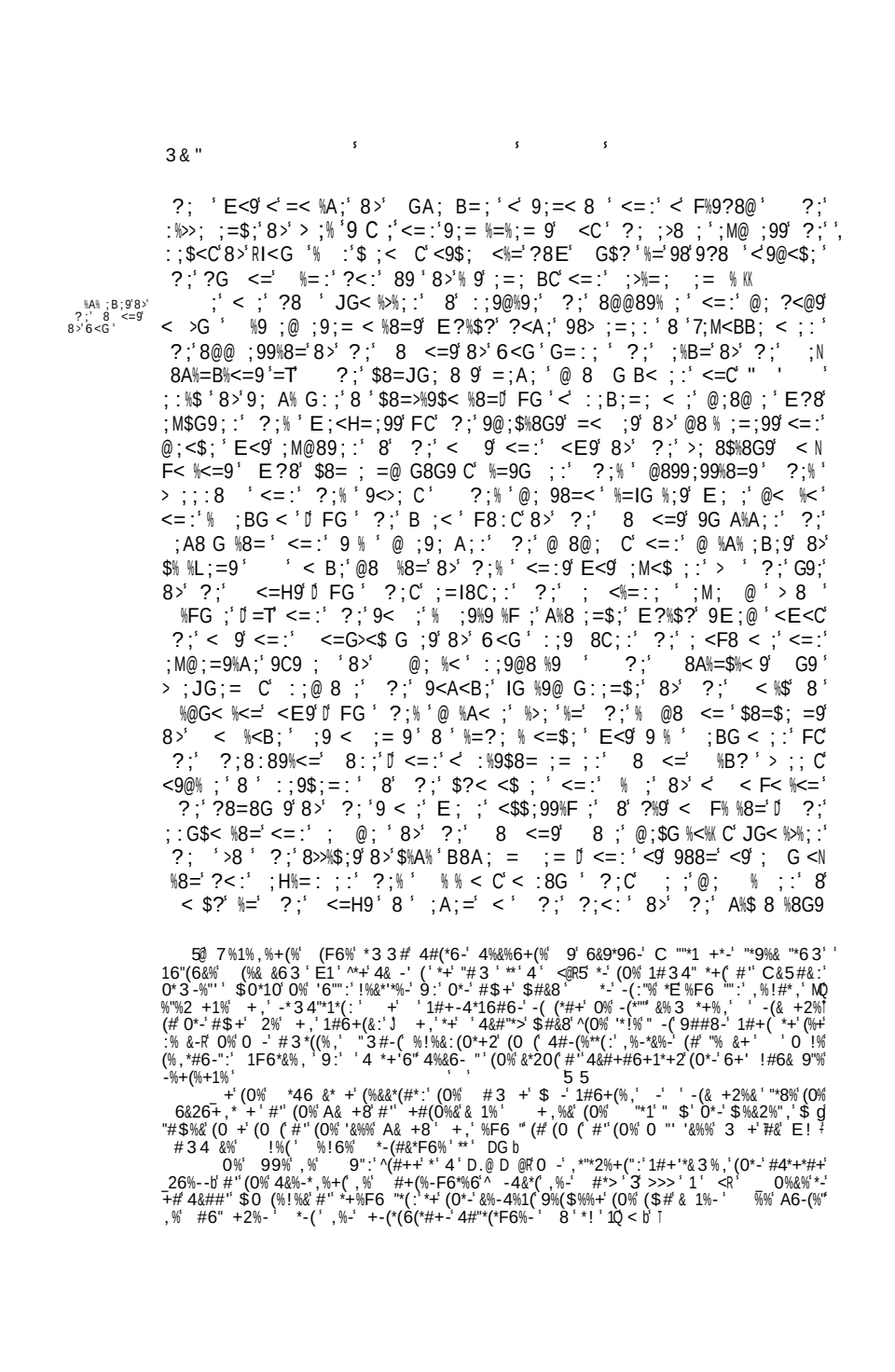
#9*"*#&'2%-(*-'+6+1'-64%&' -(& ' 3 +%(J?

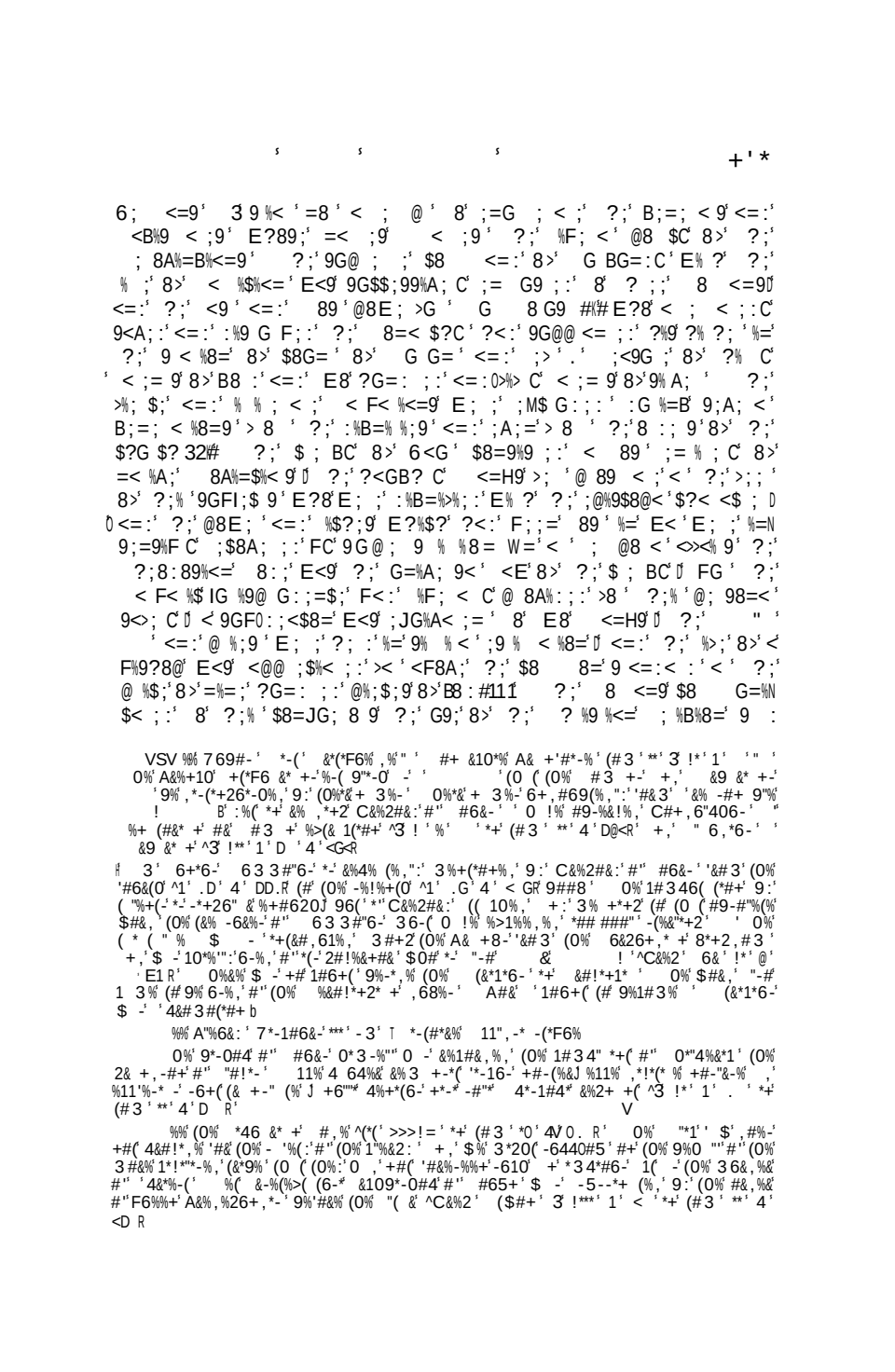
&9*(%&' +(%'' %&#>' ,%*+'4*6-'*4-%- 1%&,#-

\6F ',#36*(' 6,%-''#!*(' 3#&%'4 (&*-

BG;9 9 G=<=% 8G9 C F;9 8E;: 8= ?%9 $88H <=: ?; :;M ; 8G9
; %=9;=9%F C <$JG% ;: ?; G9 <=: <=<B; ;= 8>?%9 ?8G9;N
?8 : > ; ?; @< %;= ;M@;$ < %8= 8> < E?8 ; C;< ?;
$<G %8G9 C E?%9@; ;: ?%9 :;9%B= 8 < G9 <=: ;M?8 ;: ?% 8
@ ;@< ; >8 > %B? %= ?; ;=9G%=B =%B? ?; ?8G 8> %:=%B?
?; %= ; @; < ; BG;9 9 ; % ;: > 8 <F ; <=: ?; <=H%9
98=0%=0 <E E?8 ;B < ;=:;: 8 ?% <@< ;= E% < F:$0
G =< @8 <>; 0 $8=:;9$;=:;: 8 I;9 8= ?; ><$% % C E% ? E?%$?
?; %B? F; <C ?%9 G9 ?; %= ;@%: 9 <C- <> ; 9G9 <%=%=B
?%9 :<=B; 8G9 <% ; C ;= ; ;: ?%9 <9 %9 F;:0$?< F; ;N
8A;: ?%9 9@;< <=: 9?%; : 9% ;= C : ;E ?; > ;; ;9 ?#./
> 8 ?; 9 <F ; G=F< ;: ?; @8=:; 8G9 B< ;9 <=: ;M$% ;:
< G9 8 9<A; ?%9 %>; <=: %F; C FC %=$;99<= :%%B;=$; ?;%
<@@ ;?;=9%8=9 G B;: ?; 8 ;<A; ?;% ?8 9;9 8= ?; F<=H9 8>
?; ;G9; ?;C 9E< ?; %A; E<=:;;: ? ;; :<C9 %= ?T ,
<:I<$;= >8 ;9 <% : 9GF9%9 ;: 8= C FC ?; <$$%:;= < #9;8C; C
8> E% : @ G 0 ;; 9 ?;C <C $8=$;< ;: %= < :< H ?%$H;
?;C ?;< : ?; =8%9; 8>?8 9;9 " ?;C E; ; %>%;: FC ?; <=B C
$8G= ;=<=$; 8> ?;% <9 ; <=: ?;C <=M%8G9 C %9 ;=;: 8 ?%9
:;$< %8= ?< %> ?; $8G : 9;%L; ?; BG% C >GB% %A;9 8=; 8>
?; ?; E8G : $G %= @%;$;9 E% ? ?%9 9E8 : <=: E8G : ;M@89;
?; 8 ?; 8= < B%FF; ; =B ? <%=9 <=: ?%9 ><% ?>G ;8
;<$?;: ?; > %;=: C ?<F% <%8= 8> < @ ;9FC ; 8> ?;% 9 E?8
;$ G% ;: ?;% ><%= %=B 9 ;=B ? E% ? F ;<: <=: E%=; $8=$;< ;:
?; > 8 ?; 9;< $? 8> ?;% ;=; C <=:9<>; C $8=:G$;: ?;
F;C8=: ?; % % 9 8> ?; G9 <9%<= H%=B:8 8 ?; ;@%9$8@<
@< <$; 8> <=B ;9 6 ;B8 C ; F <$;: ?%9 B <=:98= E% ? ;< 9
8>I8C B < ;>G C :; %A; ;: ;8 E% ? ?%9 E?8 ; >%% % C > 8 ?;
C8H; 8>9; A% G:; <=: F;9 8E;: 8= ?% ?; @ 8@; C 8> < >;
E?; ; ?; %B? ;=: ?%9 :<C9 %= ?<@@%=;99 <=: > ;;:8 ; ?<@9
?%9 9%=BG < <:A;= G ; E?%$? %9 < H;: E% ? 98 <=C $% $G N
9 <=;9 8> G ? <=: =< G ; E<9 ; < ;: FC <%=9 ?% 9;> 8
?%9 $8G9%= 8 =;@?;E ?; >% 9 ?%9 8 %<= 8> ?; <=H9 6 ;B8 C
8> 8G 9 3 E<9 F8 =<F8G 9%M C C;< 9 <> ; ?; :;< ? 8> %:8=%G9
@8 %=< %9 <=: ?;> 9% G< %8= E<9 < 89 9% % < 9%=$; ;<$? 8>

6S - ,% "#*- +, (0% 6*+ &(&% ,%(%&+**+%, (# 10 +2% (0% $ #'
(0% (%>(*+(# $ *(9%1# 3%- 3% (# 1F6*%-1% *+ (0% "(%& (*#+ %('(%&-#3%
%> 3*+ (*#+ #" (0% (#4#2& 40: 1#6", ,%'%+, (0% 1# 3 3#+ &% ,*+2]
%, &+,(%(=&6-10 a
(#S 0% 4 &%+(- #" C&%2#&: ^C&%2#&*6- A"#&%+(*6- C%#&2*6- %&% #" +#9"%
%>(& 1(*#+ S ! H +, (0%: 4 - %--%, &2% %-((%- I ! ^
9#(0*+ 6!%&2+% +, 6&26+,: % $ - 9#&+ + (0%:% & < $ - 1#+-%1& (%,
9*-0#4 #" #6&- *+ /@< +, ,*%, *+ /G< #& / < - * '(%& 0% 9 , (%&3*+ (%, 0*-
0*-(#&: %% 0*- "*%9: ,# 99#(#" *62+: ^*(((0 h +%$
%+ (0% 3#*&% ,%*T 1 , 3*% E1 (#3 >!(4 *SI &&'





/ %/' <=BG<B;'I F G ' ?;%' <=BG<B;' <=:' ?;%' ; %B%8=' ?<:' %#%H;' : ;B; =; < ;#' > 8 ' ?;' 9% @ ;' @G % C' 8>' ?;' GBG9 <=' <=:' @89 8 %$' <B; ' ?;' @ 8B ;99' 8>'9G@; 9 % %8=' <=:' < F< %9 ' E<9' =#%:' <=:' G=%A; 9< D' ?:' E8 9?%@' 8>' ?;' 9<%= 9' $8=$;< ; :' > 8 ' AG B< ' ;C;9' >;;' 6 8:' 8>' ?;' ? %9 %<=9' D <=:' ?;' G9 %$' :%< ;$ ' 8>' @;<9<= 9' <=:' 98 :%; 9' E<9' $8 G@ ; :' FC' <' ;G 8=%$' %:%8 ' <=:' @ G=;%< %8=' ; ' 9G$?' %= ; $8G 9;' 8>' 9<$; :' <=:' 98$%<' $8 G=%8=' ; <:%$< ; :' ?;' :%9 %=$ %8=9' 8>' F% ?' <=:' A%$ 8 C' D' <=:' ?;' =< %8=9' 8>' 6<G ' E; ;' B <:G< C' $8=>8G=:; :' G=:; ' ?;' =< ;' ', <=:' B8A; = ;= ' 8>' ?;' <=H9

=G#- %\V> ?;' <=H9' <> ; ' ?;C' %=B ; :' E% ?' ?;% ' 6< %$' 9GFI;$ 9 ' %B?' ?<A;' % @< ; :' ?;' 89 ' A< G<F ;' 8>' ?G <=' B%> 9 ' <' 9@% % ' <> :' 9C9 ; ' 8>' $8=9 % G %8=<' %F; C' =:; ' <' H%=B' ?; ;:% < C' FG ' % % ; : ' ?;' $?%;>9' <=:' $8G=9; 8 9' %B?' ?<A;' : ;F< ; : ' < ' < %9' %=' ?;' @< <$;' 8>' ?;' <;9< 9D' ?;' <:I<$;=' >%; :' E?; ;' ?;' ; @; 8 9' ;A%; E; :' ?;% ' ; $;=< C' ;B%8=9' E8G :' ?<A;' <: % ; :' 0 ?;' ;B%9 < %A;' <99; F C' 8>' > ; ; ;='<=:' E< %8 9' D' <=:' ?;' G:;' 8:; ' E?$?' ?<:' F; ;=' 9H; $?; :' %=' ?;' E88:9' 8>' 6; <=C' %B?' ?<A;' F; ;=' @8 %9?; :' <=:' % @ 8A; :' FC' ?;' $%A%' E%9:8 ' 8>' ?;' 8 <=9' G' ?;' $< ; 99' < F< %<=9' 9;$G ;' 8>' ?;% ' @; N 98=<' %=:;@-=:;=$;O' :%9:<%=;:' ?;' <F8G ' 8>' B8A; = ;= D ?;' <==G<' <99; F %;9' 8>' ?;' 8= ?' 8>' < $?' E; ;' 9% ;= C' <F8 %9?;:D' 7 <=:' ?;' =< %8=' E<9' 9;@< < ;:' <=:' < 89 ' :%998 A;:' FC' ?;' $8=N JG;9 ' 8>' 6<G ## ?;' 8=< $?C' E<9' ;>' E% ?8G ' <=C' ;BG < ' ;9 <F %9? ;= ' 8>'IG9 %$;' 8>' < 9' 8 ' 8>' ;A;=G;' ?;' 9G$$;998 9' 8>' 8A%9' E<= ;:' ;98 G %8=' 8' <99G ;' 8 ' 9 ;=B ?' 8' ;M; $%9;' ?;' ;B%9 < %A;' <=:' ;M;$G %A;' @8E; 9' E ?%$?' ?;' @;8@ ;' ?<:' <F:%$< ;:D' ?;' 8C<' I=; 8B< %A;' E<9' :%9 %=BG%9?;:' 8= C' FC' <' 8 ;' < @ ;' @ %A% ;B;' 8>' <@%=;' <=:' G :; D' <=:' ?;' 8A;' 8>' > ; ; :8 ' 98' 8> ;=' %=A%B8 < ; :' <=:' :%9B <$; :' FC' @ %A< ;' < F% %8=' E<9' ;:G$; :' < 8=B' ?;' %$;= %8G9' <=H9' 8' ?;' $8= ; @' 8>' 8 :; ' <=:' ?;' :;9% ;' 8>' % @G=% C' ;A;= C0>%A;' C;< 9' <> ; ' ?;' :;< ?' 8>' 8A%9' ?%9' B <=:98=' 6 8= <=' H%=B' 8>' G BG=:C' 9;=' <=' < C' 8' %=A<:;' ?;' 6 8 ?%$' @899;99%8=9' 8>' ;@ % <=%<' 8 0

+S ' #+ 3:'e *+*' ,%' T 1 , 3*%' ,%-' +-1&*4(*#+-' (#((*' >>*!' 4' < @G' 0 -' -1%&(*+%,'(0%' / ! ' ! ' $0*10' (0&#620' (0%' 3 %,*60' #'' (0% 1 ' 0 -' 2& ,6 '':' 9%%+' 4#'*-0%,'*+(#' (0% 1(6 '*'#3^'#'' (0%' A&%+&*#' * +26 5)%' +,%&' (0%' &"#:*+2* +' & 1%' (0%' 8*+2-' +,' +#9"%-' #'' A& +1%' -(*'' 6+,%&-(##,'(0% ,* "%,'#'' (0%*&' ^:%&3 +' +10#&-

DG %' 9% 6'-:-(%3%' ', ,'(&#6!0', +-'"%-' 9#*-' #+(%=)6*%6' -4&*(',%-' #*> 3-,'1' 9

(0(%%' (0% 99,', ,% 9":' 9-%&! (*#+-' ,&1' (#3' *' 5 < ' ' -0## ' -%%3' (0 (' (0%*+ -(*(6(*#+' " + (*#+ " --%39"%-' $0*10' &%' 1#%! "$*(0' (0%' A&%+10 + (*#+' 0 !%' +%!%& 9%%+' 1#+2%+* '" (#' *(-' (%34%*

<=BG;:8$?; 88@9 8> G BG=:C ; C GA; B=; <=:
?; <:I<$;= ; % 8 %;9 E; ; ;M$% ;:?C ?; ?8@;9 8>9#%
?;C < $?;: E% ?8G :%9$%@ %=; G=:; ?;F<==; 9 8>6; <=
8 6< %$ $8G= 9 ?;% < <$H E<9>;;F ;<=:G=9G$$;99>G FG '
?;> %;=: C <=:?89 %;@ 8A%=$;9 E; ; :;98 < ;:E% ? %=:%9N
$ % %=< ; <B; ?; $8 >%; :9 ?; A% <B;9 ?; $?G $?;9
?; 9; A;9 E; ; $8=9G ;:FC >% ; ?;%=?<F% <= 9 E; ; <9N
9<$;:8 : <BB;:%= 8 $<@ %A% C <=:%= ?; :%98 :; C ; ;<
>%A; ?8G9<=:8> ?;9;%=?G <= 9<A<B;9 E; ; :;9 8C;: FC
?G=B; 8 %= ;9 %=;:%9$8 : ?;= ?;@%8G9 68= <= ;@ 8<$?;:
?;BG% 8 =;B ;$ 8> ?;% ;<:; 9 <=: ? ;< ;=;: 8?8> %$
=8 < ;B< 9;= ;=$;FG %=9 <= <=:< F% < C ;M;$G %8= ?;C
<$$G9;: ?;G=%A; 9< <=:%=$G <F ; $8 G@ %8= 8> ?; @;8@ ;
5 8 8=; 1 ?;C 9<%:5 <=C 8=B; >;< 9 8 ;9@;$ 9 ?%9 H%=B ?%9
:GH; 8 ?%9 $8G= <$? <= 8A;9 8 :8 ;A% <=:>;;; C
%=:G B;9 ?%9 $ % %=< %=$ %=< %8=9 ?; 89 B;= ; $8 ;$ %8=
@ 8A8H;9 <= % ;:%< ; G G <=: ?; <9? <B%9 < ; E?8
@ ;9G ;9 8 ;=9G ;8 ;9 ;9 <%= ?%9 9;:% %8G9 9GFI;$ 9 9;:8
;9$<@;9 < %A; > 8 ?;% ;A;=B; U ?<9 F;;= ;9; A;:>8
?;9< ;=< %8= 8 ;M@89;FC ?;% %= ; @; < ;A%$;9 ?; 89
8:%8G9 <FG9;8> ;;:8 <@: 8 G@@ C % 9 899 FC ?;9@> % 8>
?8=8G <=:?G <=% C E?%$? =8E < ;A%< ;9 <=: :%B=%>%;9 ?;%
8F;:%;=$; 8 <= <F98 G ;98A; ;%B=#
?; %9%B8 ?9 ?<: ;%B=;: 8 8A%9 ?;B ;< ;9 @< 8> ?;%
6< %$ @899;99%8=9 FG ?;% 899 E<9 < @ C $8 @;=9< ;:3#
?; ;<9C $8=JG;9 <=:9;$G ; ;=I8C ;= 8> ?; @ 8A%=$;9 8>
@<%= 8 ?; 8=< $?C 8> ?; 68 ?9 E?%$? 988= %=A8 A;:
?; G;A%$ H%=B:8 8> 6< %$%< ?; 8:; @<=%< :9 9 %
:; %A; 98 ; =< %8=< A<=% C FG ?; ?%9 8 %<= 8> ?; 8 <=
@% ; %9 =;% ?; %=A% ;: =8 $8 @; ;: 8 @G 9G; ?; 8F9$G ;
<=:F 0 ;= 9; %;9 8> ?;% <==< 9 #1 ?; 68 ?9 8> @<%= E; ;
9;@< < ;:> 8 ?; ;9 8> <=H%=:FC ?; 8> C %:# 8> ?;
C ;=9;<= 8G= <%=9 ?;> <==; 9 <=:%=9 % G %8=9 <9 <9
?;C ; ; $8 8= 8 ?; 6; <=%$ %F;9 ?<A;F;;= < ;<:C]

02"C&%2#&:'#'' #6&-'^3' !***' 1' <G' *+' (# 3 ' **' 4 ' <D/ ' &%" (%-' $*(0' 3 610'
+,''%&%+1%' (0%' 1&*3 %-' (0%' &%4&##'' +,' (0%' 4#"#2:' 6 6-' %2% 3 ' ''%(6*('
+6""6-' 7 61%3 ' ++""6-' # 3 *(% 3 '&%!%&%(6&J %(' -*''#&(--*-' "*1#*'*-(',*-4"*1%+(%(' % J
4&#' "#+2-%!*((%' !*(%%' !%-(& %' % 3 %+, &%' 1#+ (6&' -((*3' -%,*(&#' *+' 4#46"#' -((*3'
(6& 6"(6-' %>#&*(6&' %(' *+' (+(6 3 ' 6+6-F 6*-F6%' 1#+(& ' -%+*#&%+Z' -S ! ' *+(% 3 *#+%'
2& -- (6&' 6(' !*>'-%' R 2 -%b' 1&%, (%! ,%&%' -*(+,% 3 _*5 (A,**"-R-*"%&%+%F(c*!%&*('

S' 4 *+' *+' (0%-%', &8' 2%-' 0 -' 9%%+' 4%16"* &":' 6+'#&(6+ (%' 0%' A& +8-' 0 ,'
' C&%2#&:'#'' #6(-J' (0%' >#+-' #&' +2"%-' ' %,%J' (0%' #3 9 &,-' ' 6"
3 &'&*,' E1' 6(' (0%' 0*-(#&:'#''(0%' *-*2#(0-'*-' #7('("%,'*+' (0%'-0#&(' +,'*(+'
4%&'%1(' 10&#+*1"%-'#'' -*,#&%'#'' %!*""%' +,' #9+'#'' *1" &

3)2

<F8G ;:' E% ?' :%%B;=$;' <=:' 9G$$;99' 8' H%=: ;' ?;' >< ;9' 8>'
@; 9;$G %8=' <=:' 8' ;M< ' ?;' % ;' <F8A;' ?;' $ 8E=' ; ' ?;'
=< %8=<' $8G=$% 9' 8>' 8 ;:8' %=' E?%$?' ?;' > ;;' 9@% %' 8>' ?;'
< F< %<=9' E<9' ; @; ;:' <=:' BG%:;:' FC' ;@%9$8@<' @8 %$C' ?<A;'
;9 <F %9?;:' 98 ;' @ G:;=' <E9' >8' ?;' $8 8=' F;=;>%' 8>' ?;'
H%=B' <=:' @;8@ ;' ?;' A<$<=$C' ' ?;' ? 8=;' E<9' 9G@@%;:' FC'
?;' $?8%$;' 8>' ?;' F%9?8@9' <=:' @< < %=;9' I' <=:' <> ;' ?;' >%%% G ;' 8>'
?;' %=;' 8>' < %$' ?;' ;B< K:%B=% C' E<9' 9 % ' % % ;:' 8' ?;' @G ;'
<=:' =8F ;' F 88:' 8>' ?;' 68 ?9' ?;' $; BC' E?8' <=8%= ;:' ?;% '
<E>G' @ %=$;' < E<C9' ;$8 ;=:;:' <=:' 98 ; % ;9' @ <$ %9;:'
?;' :G C' 8>'< ;B%<=$;I' <=:' ?;' 9@% % G<' $;=9G ;9' E; ;' :;=8G=$;:'
8=' ?;' ?;<:9' 8>' ?;' % @%8G9' 9GFI;$ 9' E?8' 9?8G :' ;9%9' ?%9' <G ?8N
% C' $8=9@% ;' <B<%=9' ?%9' %>;' 8' A%8 < ;' FC' <=' %=:;$;=' G=%8='
?;' $?<9 % C' ;A;=' 8>' ?%9' E%:8E' G' ?;' 8=< $?' ?% 9; >' E?;='
?;' <9$;=:;:' ?;' ? 8=;' E<9' F8G=:' FC' <' ;$%@ 8$<' 8< ?' 8' 68:'
<=:' ?%9' @;8@ ;' ?< ' ?;' E8G :' ><% ?>G C' ;M;$G ;' ?%9' % @8 <='
G9' ' ;' ?;' ;<' 8' % <B%=< C' ><G 9' 8>' ?%9' <: %=%9 < %8=' E; ;'
9GFI;$' 8 ?;' $8= 8' 8>' <@8E; >G' < %9 8$ <$C0' <=:' ?;' F%9?8@9'
<=:' @< < %=;9' E; ;' BG< :;:' FC' <' >G=:< ;= <' @ %A% ;B;' ?< '
?;C' 9?8G :' =8' F;' :;B <:;:' % @ %98=;:' 8 G ;:' =8' @G=%9?;:'
E% ?' :;< ?' ;M% ;' 8' $8=>%9$< %8=' G= ;99' FC' ?;' > ;;' <=:' @GF %$'
IG:B ;=' 8>' ?;% ' @;; 9
=;' 8>' ?;9;' ;B%9 < %A;' $8G=$% 9' 8>' 8 ;:8' ;M< %=;:' <=:' < %'88:I8 1'
>%;:' ?;' $8:;' 8>' <E9' E?%$?' ?<:' F;;=' $8 @% ;:' FC' <' 9G$$;99%8=' 8>'
68 ?%$' H%=B9' > 8 ' ?;' >%; $;' G %$' 8' ?;' :;A8G' B%$<' 9'
8=B' <9' ?;' %9%B8 ?9' ?; 9; A;9' E; ;' 9< %9%;:' E% ?' ?;' G:;'
$G9 8 9' 8>' ?;% ' <=$;9 8 9' ?;C' %=:G B;:' ?;% ' 9GFI;$ 9' 8>'
JG% <%=' <=:' @<%=' %=' ?;' ;=I8C ;=' 8>' ?;' 8 <=' <E' ?;% '
B #G< ' % @ 8A; ;=' 9' %=' < 9' %=' @8 %$C' <=:' < ' ;=B ?' %='
; %B%8=' ;=$8G <B;:' ?; ' 8' % % < ;' <=:' 8' 9G@; 9;:;' ?;9;'
>8 ;%B=' %=9 % G %8=9' I' <=:' 8' $8 @89;' <' $8:;' 8>' $%A%' <=:' $ % %=<'
IG %9@ G:;=$;' >8' ?;' G9;' 8>' < B ;<' <=:' G=% ;:' @;8@ ;' ?;'
9< ;' 8F %B< %8=9' <=:' ?;' 9< ;' @ %A% ;B;9' E; ;' $8 G=%$< ;:' 8'
?;' =< %8=9' 8>' ?;' @<=%9?' 8=< $?C' P' <=:' ?;' $8=JG; 8 9' %=N
9;=9%F C' ;=8G=$%=B' ?;' ;G 8=%$' %:%8 I' 9GF % ;:' 8' ?;' ;'
9 <%= 9' 8>' ;JG% C' <=:' ;M< ;:' ?;' 8 <=9' 8' ?;' @< %$%@< %8='
8>' > ;;:8 ' ?;' ; %' 8>' ?%9' % @< %<' @8 %$C' E<9' ;=?<=$;:

0%' 1(-'#''(0%'1#6+1*"-'#'' #"%,#' &%'-(*"" (0%' 3#-(' 6(0%+(*1'&%1#&,-'#'' (0%'
106&10' +,'1#+-(*(6(*#+'#'' 4 *+' 0%' '#""#&!*+2' 4 -- 2%-' (%' 4 &(*16" &":'*3 4#&K
(+(^***' @' * '*!'@/' 'D'<'.'/' '!*' 'D' <' '@' '!**' * '>***' '<' R'
'0 !%' '#6+,' -1#6' ^ *-(' #'' (0%' +1*%+(' C%&3 +-' >!' D ' +,' ++#((*#+-'
>!*' +,' >>>*** R' +,' A%&&%& -'^ *-(' C +,& "%',%' T -4 2+%'(#3'** R' !%&:'6-%'6"
+,' 116& (%'26*,%-

FC ? ; 9% G< %8= 8 @<%= G = : ; ? ; ;%B= 8 ? ; %9%B8 ?9 ?# 8A%=$%< 9 E ; ; 8=B 9;@< < ; : > 8 ? ;% %<= <9 ; 9 FC ? ; % ;$8=$% <F ; :%>>; ;=$; 8 ; %B%8= > ; ? ; $8=N A; 9%8= 8 ;$< ; : ?<: ; 8A; : ? ;@ ;IG : %$; 9 8 ? ; < ?8 %$9 ? ; $8<9 9 F8 ? 8 ? ; $; <= <= : ; : % ; <%%; <= E ; ; 9 % @899;99; : FC ? ; <9 ; = ; @; 8 9 E?8 9;$; C ;M$% ; : : %9$8= ; = ; : @;8@ ; 8 ;I;$? ;C8H; 8 ? ; < F< %<=9 <= : 8 <99; ? ; =< ; <= : : %B=% C 8 8 <= $% %L;=9 ? ; < ;B%<=$; 8 : 8GF >G 9GFI;$ 9 %9 %= : ; ; : 89 ;>>;$ G< C 9;$G ; : FC ? ;% 8E= @; 9G<9%8= ?< ? ;C ?<L< : 8 ; %= < ;A8 ?<= ? ;C $<= ?8@; 8 8F <%= FC < ;A8 G %8= D FG % ? ?<9 <@@; < ; : 98 =< G < 8 8@@ ;99 ?89; E?8 E; ?< ; <= : >; < ?< ?; $8= < C 9C9 ; E ; : ;9; A;9 ?; @ <%9; 8 E%9 : 8 <= : 8 : ; < %8= T # BIIII<E8 ?% ; ? ; H%=B : 8 9 8 ? ; <=H9 <= : %9%B8 ?9 E ; ;9 <FN %9? ; : %= 6 <G <= : @<%= ? ; <M8=9 <$?%; A; : ? ; $8=JG ; 9 8 % <%= ? ; ?% : B ; < : %8$; 9; 8 ? ; 9 ; >; $ G ; 8 ? ; ;9 %=$; % <%= E<9 < ; <: C 9 ; @< < ; : > 8 ? ; 8 <= ; @% ; ; %B? E% ?8G ; @ 8<$? : ; $ %=; < 9 8 C >< % %< 8 ?; 89 % % ; < ; <= : 8F9$G ; 8 ? ; 89 ; < =; : 8 C ; <: ; 9 ? ; <M8=9 E?8 ; M$; : ; %= ?; G9; 8 ? ; 8< 8 ?; F< ;0 <M; E ; ; %B=8 <= 8 ? ; < E?%$? $8G : < 8=; ; @; @; G< ; ? ; >; ; 8 ? ; % ; M@ 8% 9 ? ; 8A%=$%< 9 ; <@9%=B %= 8 F< F< %9 = ; B ; $; : 8 : ; 9$ %F ; ? ; G%= 8 ? ; % $8G= C <= : ? ; : 8GF >G < : % %8= E<9 < 89 ; M %=BG%9?; : F ; >8 ; ? ; %99%8=< %; 9 8 8 ; # 8 ; : ? ; %B? 8 ? 9$%; =$; <= : ? %9 %N <=% C ? ; : ;$ < < %8=9 8 6% : <9 ? ; > <B ; = 9 8 ><F ; 9 8 ; ==%G9 ? ; 8F9$G ; ?%= 9 8 ? ; <M8= <E9 <= : $? 8=%$; 9 <= : ? ; ;$$;9%<9 %$< < ; 9 8 ? ; A; = ; <F ; ; : ; ?<A; F ; ; = % G9 < ; : FC ? ; : % %B; =$; <= : 98 ; % ; 9 ; F; %9?; : FC ? ; >; =$C 8 9 G9$$; ; : %=B E % ; 9 E?89 ; E8 H9 < 8 =8 < F% %8G9 ;% ? ; 8 $; =9G ; $<1 8 <=9; %F; 1 ; ? ; ?%9 8 %<= 8 ? ;

3 0% #, % # (0% *-*2#(0- &%26 &" : , *! *, %, ' *+(# ($%"! % 9##8- 0 - 9%%+ 1#+%1(" : 469"*-0%, 9 : 7#3 #6F6%(^*+ (#3 *! 4 D@< . GR (0 - 9%%+ (&% (%, 9 : (0% 4&%-*, %+(, % #+(%56*%6 ^ -4&*(, %- #*> 3 >>! ** 1 *R $*(0 %>1%--*! % -%! %&*(: , *-"*8% (0%-(:"%J , %(%-((0% -64%&-(*(*#+J 96(-0 "" 4&%-63 % (# (0*+8 (0 ((0% 1*! *")6&*-4&6, %+1% , *-4" : - 3 #&% 1*! *"*[%, +, %+K "*20(%+%, -((5 # -#1*%(: (0 + (0 (# "%% 6&2 0, * + #&%! %+ # "(0% #39 &, - (5 %% C*", - , % >1*, *# &*(++*-% 1 D/ 4)0* %, *(C "%J %++*6- *-(&*(#+63 1 D </ / 4 G/ / %, *(C "%J %, % *-(11"%-* -(C%+(*- +2"#&6'** 3 * 1 =: 4 . /< %J DD 4 / %, *(3 *(0J 0&#+ >#+*163 4 D< C*"%V 0% +2"# >#+ " $- 9%&% 469"*-0%, 9 : H *"8*+- #+, #+ @< *+ '#"*J +, (0% %2%- "**1 % 9 : #((#+ +, " &8% #+, #+ @<G *+ '#"*# j 4 44%+, *> / b

H00 0% " 9#&*#6- & &(% +, %% *+2%+*#6- & 0*(8%& &% (0% ($# 3#, %&+ $&*(%&- (# $0#3 3 4&*+1*4 "": *+, %9(%, 0% 4 &(*16 & 0*-(#&* + # +10%-(%& %39& 1%- 6+, %& '% (#9-%("&% (*("% -69)%%(" "3#-(- %>(%+-*! % - (0% 2%+%& " 0*-(#&: # ' +2" +,

; @% ;' <C' F;' ; @ ; :' 8' @G 9G;' ?;' ;98 G %8=9' 8>' <' 8 <=' @ 8A%=$; ' % ' % ' A<=%9?;9' % 8 ' ?%9' 9%B? 0' <=:' <=' =B %9? <=' <C' $G %8G9 C' <$;' ?;' ;9 <F %9? ;= ' 8>' ?;' < F< %<=9' > 8 ' E?8 ' ?;' : ; %A;9' ?%9' =< ; ' ?%9' <E9 ' <= : ' @; ?<@9' ?%9' 8 %B%= F8G ' >8 C' C;< 9' <> ; ' ?;' :%998 G %8=' >' ?;' 8 < ' B8A; =0' ;= ' 8 %B; ' <@@;< 9' 8' ?<A;' 8F <%=; :' ?;' 9G@ ; ; ' ?8GB?' 1 :' E' @ ;$< %8G9 ' $8 <=:' 8>' ?;' @ %=$;9' <=:' $% %;9' 8>' % <%=' ?< ' G=>8 G=< ;' 8=< $?' ?<9' F; ;=' < 89 ' G=<=% 8G9 C' $8=: ; =; :' >8 ' ?;' E ;<H' <=:' %9$?%;A8G9' @8 %$C' 8>' %=A% %=B' <' >8 %:<F ;' 9 <=B; ' 8' ;@; ' ?;' A;M< %8G9' %= 8<:9' 8>' <' :8 ;9 %$' >8; ' %9' < F<99<:8 9' < ;' :%9@< $?; : ' FC' ?;' B < ;9 ' ?%9 8 %<=9 ' 8' ?;' $: (9 ' 8>' 6 ; <=C0' ?;C' <: : ;99' <' @< ?; %$' 8 < %8=' 8' ?;' B;=; < ' <99; F C' 8>' ?;' <M8=9 ' <=:' ?89;' E< %H;' < F< %<=9' ;98 A;' 8' <99%9 ' E% ?' <' > ; ; ' <=:' < C' ?;' 9G@@ %<= 9' 8>' <' :%9 <= ' <=:' G=H=8E=' %9 <=:' > % <%=' ?<:' %=: ; ; :' F; ;=' G=H=8E=' 8' ?;' <M8=9 ' ?;' ;<9G ;' 8>' % 9' $< < % %;9' E8G :' ?<A;' F; ;=' ;99' $8 @ ; ; ' G ' ?;' 9 ;=B ?' 8>' ?;' 8 <=' B8A; = ;=' $8G :' =8 ' < E<C9' BG< :' ?;' < % % ;' @ 8A%=$;' <B<%=9 ' ?;' @% < ;9' 8>' 6 ; <=C0 ?;' %=: ; @;=: ; =' :' =:' :%A%: ; :' < ;9' E ; ' ;M@89 ; :' 8' ?;% ' < <$H9' 0 <=:' ?;' <M8=9' %B? ' 98 ; % ;9' I8%=' ?;' $8 9' <=:' ?;' %; 9' %=' <' <$% ' 8 ' ;M@ ;99 ' $8=>; : ; <$C' 8>' <@%=;' <=:' : ;9 G$ %8=' 8 %B; ' $8G :' 8= C' F< %$;' ?;' A< %8G9' @; % ;' E ?%$?' <99<%: ; :' 8=' ;A; C' 9%: ;' ?%9' ? 8=;' <=:' ?%9' @;8@ ; 0' <=:' ' ?%9' @8 %$C' <C' : ;9; A;' ;% ?; ' @ <%9;' 8 ' ;M$G9; ' %>' ?;' @ ;>; ; :' ?;' < %<=$;' 8>' ' < F< %<=9' E?89;' =<A<' @8E ; ' ;=: ; ;:' ?; ' ?;' 89 ' :<=B; 8G9' ;=; %;9' <=:' ?;' 89 ' 9; A%$;<F ;' < %;9' ;=B%9 ' <=:' 8 = ' <9' ?;C' <=B; :' < 8=B' ?;' \# ; ' $8<9 ' E% ?' ? ;;' 9?%@9' E ;' ;=B<B; :1' FC' ?;' @ =?%;' < @ ;' 9 %@;=: ' 8' ; F <$;' ?;' : ;>; =$;' 8>' % <%=0' <=:' ?;% ' %= ;@%:' A< 8G ' 988=' : ; %A; ; :' ?;' $8G= C' > 8 ' ?;' < ; :8=%<=' %=A<: ; 9' ?;' %9 ;' 8>' ?<=; ' <' 9;$G ;' <=:' >; % ;' :%9 %$ ' E<9' < 8 ; :' >8 ' ?;' ;9%: ;=$;' 8>' ?;9;' 6 ; <=' <GM% %<; %' <=:' ?;C' E ; ;' 9G@@ %; : ' <$$8 :%=B' 8' ?;' ;< C ' E% ?' <' @ ;= %>G ' < ;E<=$;' 8>' $ 8 ?%=B' <=:' @ 8A%9%8=9 ' ?%9' ><A8G <F ;' ;$;@ %8=' ;=$8G <B; :' >%A;' ?8G9<=:' E< %8 9' 8' ; F< %%' E% ?' ?;% ' >< % %;9' %=' 9;A;= ; ;=' A;99; 9' <=:' ?;' %=><= ' @8E ; ' 8>' ;=B%9 ' <9' >8 %N >%; :' FC' ?%9' 9 8=B' <=:' 9;<98=<F ;' ;%=>8 $; ;= ' ?;' $ <> C

$ 9*10' 3 :' ,%&*!%'-# 3 %' 1#6 (%+ 1%' '&# 3' (0%'"##-%'%>4&%-' &* ' #'' C %(-' ,' %, % '*-' '& 3 %,' *+(#' ' &%2 " &' 4(:' 9 :' *(*8*+, ' d' >M 3' 3 #+8' #'' (0%'(%+(0'#%+(6&:' ^-%%' #6-*+ ' *-'(' ,m' I 3 4*&%' ,04 ^5 , N ' (# 3 ' **' 4 ' </ R' 4*+ ' +,'%!%+' 6 3 %' 0 !%'(##' '&%%":'6-%,' (0*-' -6-4*1*#6-' %!*, %+1%' $*(0#6(' &%2 &, *+2' (0%' 4&%1*-%' +,' 4&#9 9"%' (%-(*"4#+:' #'' %++* § +(%&% ' !%+%+3 (' (&%-' 3 6"3' ' C%& 3 +*,' QQ' 0 ' *+' F6*9+-' %& +(' #&-' %(_< ' 4' Q@(' %, ' #3 3 -%+' 4 ')5*%+,">'5

' %'

< F< %<G 9GBB>;9 ; : 8 8 %B; ? ; 8FA%8G9 <: A<= <B; 8> >%M%=B %= ? ; = ; %B?F8G ?88 : 8> ? ; %; 9 < $8 8=C 8> ><% ?>G < %; 9 < ?% : > ; ; 8 > >8 C 9?%@9 G= : ; ? ; $8 <= : 8> ?%9 98= <= : = ; @?; E 9<% ; : > 8 6 ; <=C <A<B; : ? ; H=; C9 <= : : %98<F< H; : < = ; E < C 8= ? ; $8<9 8> 8 ?G F; <= : E 8 ?%<= < ? ; 8@@89% ; ; M ; % C 8> ? ; : ; A8 ; : <= : E<9 ;<9C 8 >8 ;9; ; FG % E<9 % @899%F ; 8 @ ; A; = ? ; % N @; = : %=B ; A% 9 ? ; E8 =< %8=9 E ; ; 988= : %A%: ; : <= : ; MN <9@; < ; : FC G G< I; < 8G9%; 9 ? ; <M8=9 <B=%>%; : < ?< ? ; C ?<: : 8=; <= : 9G>>; ; : %= ? ; $<G9; 8> <= G=B < ;>G @; 8@ ; 6 E?% ; ? ; % 8=9 ; B ; ; : ? ; %F; < ; E< : 9 E?%$? $8G : =8 IG9 %>C ? ; <A< %$; 8> ?89; ? ?<GB? C ; $; =< %; 9 ? ; $<G9; 9 8> >; < <= : ?< ; : E ; = > < ; : %= 8 <= % ;$8=N $% <F ; JG< ; ? ; <M8=9 > ; E 8 < 9 <= : %> ?; C @; < ; : < ;<$?; 8G9 <99<$; : G %=B ?; 9; $G % C 8>< >;<9 ? ; C : ; 9 8C; : ? ; ;$%@ 8$< $8=>%: ; =$; E?%$? 9G9 <%=9 ?; %= ; $8G 9; 8> @; <$; <= : E< %#T

3 (*-8 >#+ 0#4 (&,0! ''0''"2

;=B%9 E?8 F8 : C <9@% ; : 8 ? ; $8=JG; 9 8> % <%= ; M?8 ; : ?%9 $8G= C ; = 8 ; F <$; ? ; B 8 %8G9 8@@8 G=% C ? ; @<%= ; : %= %A; C $8 8G 9 ? ; >; % % C 8> ? ; 98% ? ; E ; < ? 8> ? ; $% %; 9 ? ; @G9 <= % 8G9 ; @; 8> ? ; =< %A; 9 <= : ? ; $8=N A; =%; = 9% G< %8= 8> < 9@<; %8G9 98 % < C %9 <= : <$$; 99%F ; 8= < 9%: ; 8 8 ? ; <M8= > ; ; 9 ? 9G$$; 99%A; $8 8=%; 8 E?%$? %99G; : %= ? ; @; %8 :8><$; = G C > 8 ? ; 8G ?9 8> ? ; F; ? ; ;9; <= : F# ?%=; E; ; @ %=$%@< C $8 @89; : 8> ? ; ; A< %<= %F; 8 =< %8=9 8>6; <=C ? ; T" ? ; - 2 ? ; & 2 ? ; WG ;9 E?8 >8GB= G=: ; ? ; @; $G %< F<==; 8> ; =B%9 <9N 9G ; : ? ; ; 8> ; <: %=B ? ; $8G= C ; = %= ? ; @< ?9 8>B 8%C <= : 8> ; ; $ %=B %= c ; = ? ; >% 9 %=: ; @; = : ; = H%=B:8 1 ? ; (; 8> ? ; = ; @ %9; E<9 < %FG ; : 8 ? ; @ % % %A; <M8=9 <= : ? ; $8 8= <E9 <= : <=BG<B; 8> ? ; $8=JG; 8 9 < ; : ; 9$ %F; : FC ? ; =< %8=< <@@; < %8= 8><@; 8@ ; E?%$? < ? ; ; = : 8><8> >8G ?G= : ; : C ; < 9 @ 8 : G$; : ? ; >% 9 8=< $?9 8> 8G ? % <%= ? ; =B ; 9 E ; ; :%9 %=BG%9?; : FC ? ; % =G F; 9 <= : ? ; % 9J$$; 99 <= : ? ; C $ <% ; : ? ; ?8=8G 8><%M%=B <@; @; G< =< =; 8= ; $8G= C 8> E?%$? ? ; C 8$$G@%; : ? ; 89 < @ ; @8 %8=' ? ; < F< %<=9 E?8 >8 8E; : ? ; ?8@; 9 8> <@%=; ; % ? ; 8= ? ; <= : 8 9; < E ; ; %=9; =9%F C F ; = : ; : E% ? ?9 %@ ; $8=>; : ; <$C

N&+** -'*3 46(%-'(#'(0%' >#+-'(0%'36&,%&'#'(01 %'06+,%,' &*(*-0', *5 J ' 1&*3%' +#(' 6+-6*(9"%' (#' (0%*&' - 5%'3 ++%&-' 6(' $%' &%' +#(' #9"*2%,'(# 9%O% %'^-%%' % &%:' #'' #+3#6(0'3'!*6'1' DR'(0 (' (# %O%+2%' *-'(0%*&' 3#+6K 3%+(' $0*10'(0%' 2* +(-' 0 ,' '1$3%&":'6 +-4#&(%,' '&#3' '&*1 '(#' &%" +, ' +,' $0*10' $ -'&%3#!%,'(#' &*(*+'9:'("3'#&,%&' '' 39&#-*6-' +,'(0%' &('#'' %&"*+

?;' K ' E?8' ?<:' F;;=' ; @ ;:' FC' ?;%' A%$%=% C' 8' ?;'
% %9?' 9?8 ;9' %B?' F< <=$;' :G %=B'<' 9?8 ' #@<$;' ?;' 9 ;=B ?'
<=:' ;@G < %8=' 8>' ?;' =< %A;' <M8=9 ?;' M ' ?;' " '
?;' " '< ;' >;%= C' :;9$ %F;:' =:'98 ;'<:A;= G 8G9' " '
E?8' ?<:' E<=:; ;:'<9' ><'<9' ?;' < %$' %B?';' F< H' 8=' F8< :'
?;' 6; <=' A;99; 9'>8' ?;' $8=JG;9' 8>'<' =;E' E8 :#T# G'
?%9' < :G8G9' <$?%;A; ;=' E<9' =8' @ ;@< ;:' 8' ;M;$G ;:' FC' ?;'
G=%8=' 8>' =< %8=<' @8E; 9' <$?'%= ;@%:' $?%;> <%=' <$$8 :%=B' 8'
?;' ;<9G ;' 8>' ?%9' >< ;'<=:' >8 G=;9' <99; F ;:' ?%9' >8 -E; 9
;JG%@@;:'<' >;;' 8>' ? ;;' 8' @; ?<@9' 8>' 9%M C' A;99; 9' $?89;' ?;'
@ <$;' 8>' ?;' < <$H' <=:' $8=:G$;:' ?%9' 9GF9;JG;=' 8@; < %8=9'
<$$8 :%=B' 8' ?;' ;A;=9' 8>' ?;' E<' <=:' ?;' :%$ < ;9' 8>' ?%9'
@ %A< ;'%= ; ;9 ' =' ?;' %=A<9%8=' 8>' % <%=' <=C' ?; 8;9' A<=0
'JG%9?;:'<=:'>; 0' FG' 8= C' 9;A;=' A%$ 8 %8G9' ;<:; 9'<99G ;:'8'
< ' ;<9' <%=<%=;:' ?;' % ;' 8>' H%=B9' ;A;=' %=:;@;I%:;='
? 8=;9' ?;' <M8=' ;@ < $?C' E; ;'>8G=:;:'FC' ?;' $8=JG; 8 9'
<=:'9;A;=' >< % %;9' 8=;' 8>' E?%?' ?<9' F;;=' $8= %=G;:' FC' >; < ;'
9G$$;99%8=' 8' 8G' @ ;9;=' 98A; ;%B=' :; %A;:' ?;%' ;JG<' <=:'
9<$;:' %=;<B;'> 8 ' 8:;=' ?;' B8:' 8>'E< ' ' ?<9' F;;=' @ ;N
;=:;:' ?<' ?%9' ;@GF %$' 8>' H%=B9' E<9' 8:; < ;:' FC' <' B;=; <'
$8G=$%' <=:'<' 9G@ ; ;' <B%9 < ;' G' 9G$?' <=<' <%>%$%<' 9$?; ;'
8>'@8 %$C' %9' ;@GB=<=' 8' ?;' G:;' <=:' G FG ;=' 9@% %' 8>' ?;'
<M8=9 ?;%' <E9' <;'9% ;=' <=:' ?;%' % @; >;$' <==< 9' <>>8 :'
8= C'<' :<H' <=:'F 88:C' @ 89@;$'8>'%= ;9 %=;':%9$8 : #\T /
' 8=H' E?8' %=# ?;' @ 8>8G=:'%#8 <=$;'8>'?G <=' %>;' ?<9#1#/E'
@ ;9G ;:' 8' ;M; $%9;' ?;' 8> %$;'8>'?%9 8 %<=' 9 <=B; C' :%>%BG ;9'
?;'9 < ;'8>' % <%='<' ?;' % ;'8>'% 9'9;@< < %8=' > 8 ' ?;' ;9 ; ='
; @% ;' 6% :<9' :;9$ %F;9'%='> 8 %:' <=BG<B;' ?;' % @ 8A; ;= 9'
8>'<B %$G G ;' ?;' >8 ;%B=' <:;' E?%$?' > 8E;:' E% ?' ;A; C' %:;'
%= 8' ?;' ?< ;9' <=:' ?;' ;A; =' ?;'98 %:'<=:' 8> C' $8=9 G$ %8='
8>'@GF %$' <=:' @ %A< ;' ;:%>%$;9' 0' ?;' <$$G9;9' ?;' 9%=>G' GMG C' 8>'
?;' % %9?' @;8@ ;'0' 8>'<' @;8@ ;' <$$8 :%=B' 8' ?;' 9< ;' E % ;'
%B=8 <='8>' ?;' 89' 9% @ ;'< 9'<=:'%=$<@<F ;' E% ?8G' ?;'<%:

"'' (0%-%'(&*9%-' &%'%>4&%--":'%+6 3%& (%,'9:' %,%'^'*'1' /'4'/D 3'!'1' '
4'*2#R' +,'(0#620' '0 !%'1#+-*,%&%,' &' 0*(8%&T-'&5 &8 'e *-('#'' +10%-(%&'
!#"'**'4' /< /.<R' ',# +#(' 4%&1%*!%'(0%' 9-6&,*(:'%&'' 644#-*+2'(0 ((0%' &*-* +-'
E1' $%&%' 3*+2"%,'$*(0'(0%' +2"# >#+-

%,%'0 -'%+63%& (%,'-%!%+'8*+2-'($#' >#+ ' ' 6(%' +,'^#6&' +2"%-' $0#
-611%--*!%":' 1F6*&%,' *+' (0% 0%4(&10:' +' *+,%'*+*(% -64&%3 1:' #'' 4#$%&' +,'
&%+#$+' 6(' (0%*&'&%*2+'$ -'(0%%''%1(''+#('"' $'96('#'' #+F6%-('5 +,'0%'#9-%&!%-'
*+'-*3*" &' (%&3-' (0 (#+%'#" (0%3' -69,6%,'(0%' -"%-'#'' +' +,' +2"%-%:J +,'
(0 (+#(0%&'*34#-%,' '(&*96(%'#+' (0%'5#(-' +,' *%(-'^ '%(' 11"%-' 3'**'1' /' '
<R' ^ %%' 9%"#$'+#(%' @ b' H

? %%'C*", -',%' >1*,*4' &*(++* %'1'*'4'*'%,*(' (%

+,)

A< %<= ' 98= ' < : A<=$; : ' %= 8' % 9?% ;' D F ; 9%; B ; : ' < %9FG C ' < ' ?< ' % ;' 9; < ; : ' 8=' < ' $8 <= : %=B' ; %= ; =$; D <= : ' A<=JG%9?; : ' <=' < C' E ?%$?' < : A<=$; : ' 8' ?; ' ; %; >' 8>' ?; ' $% C ' =' ?; ' 9GF9; N JG; = ' F< ;' 8>' < F8 8GB? Z1Z' ?%9' % %9?' ; =; %; 9' : %9@ <C; : ' ?; % ' % % < C' 9$%; =$; ' ?; % ' 88@9' E ; ;' >8 ; : ' %=' ? ; ;' %=; 9' D ;<$?' %=; ' $8=9%9 ; : ' 8>' ? ; ;' : %9 %=$ ' F8 : %; 9 ' <=: ' ?; ' $<A< C ' ?; ' < $?; 9 ' <=: ' ?; ' @%H; ; =' E ; ' : %9 %FG ; : ' <$$8 : %=B' 8' ?; ' @ %=$%@ ; 9' 8>' 8 <=' <$ %$9 ' ?; ' <M8=9' $?< B ; : ' %=' 8=; ' %B? C' $8 G =' F8 : C' ; =$8G= ; ; : ' E % ?' ?; % ' 9?8 ' 9E8 : 9' ?; ' 8=B' <=$; 9' 8>' ?; ' % 8=9 ' <=: ' <%= <%=; : ' <=' ; JG< ' $8=> %$ ' % ' ?; ' <@@ 8<$?' 8>' =%B? ' E8' : ; $%9%A; ' A%$ 8 %; 9 ' ?; ' : ; < ?' 8>' ? ; ; ' % %9?' H%=B9 ' <=: ' ?; ' ; : G$ %8=' 8>' % ; =$; 9 ; ' < ?' <=: ' 6 8G$; 9N ; ' ; 9 <F %9?; : ' ?; ' >< ; ' <=: ' @8E ; ' 8>' ; <G %=' ?; ' B <=: 98=' 8>' ; : %$ ' E?8' $< %; : ' ?%9' A%$ 8 %8G9 ' < 9' 8' ?; ' F<=H9' 8>' ?; ' ; A; =

> ; ' <' E< ' 8>' <=' ?G= : ; : ' C ; < 9 ' ?; ' %=: ; @; =: ; =' % 8=9' 9 % ' <=' =B?' 8$$G@%; : ' ?; ' E?8 ; ' ; M ; =' 8>' ?; ' ;9 ; =' $8<9 ' > 8 ' ?; ' E< ' ' ,8>' = 8=%=G9' 8' ?; ' ; M ; ; ' @ 8 8= 8 C' 8>' 8 =E< D <=: ' ?; ' ' @ %=$%@<' $% %; 9' 8>' ?; ' %= <=: ' $8G= C' 9 % ' 8@@89; : ' ?; ' < <9' 8>' ?; ' < F< %<=9 ' ;9%9 <=$; ' F; $< ; ' 8 ; ' <=BG%: ' <9' ?; ' =G F; ' <=: ' F8 : =; 99' 8>' ?; ' <99<% <= 9' $8= %=G< C' %=$; <9; : ' %==%=B' ?; % ' E<C' FC' 9 8E' <=: ' @<%=>G ' ;>>8 9 ' ?; ' <M8=9 ' ?; ' =B ; 9 ' <=: ' ?; % ' A< %8G9' $8=>; : ; < ; 9' <: A<=$; : ' > 8 ' ?; ' 8 ?' > 8 ' ?; ' <9 ' <=: ' > 8 ' ?; ' 8G ?' % ' ?; % ' A%$ 8 %8G9' F<==; 9' E ; ' G=% ; : ' %=' ?; ' $; = ; ' 8>' ?; ' %9 <=: ' ; C8=: ' ?; ' ; A; =' ?; ' % 8=9' 9 % ' <99; ; : ' ?; % ' =< %8=<' > ; ; : 8 ' E ?%$?' 9G A%A; : ' ?; ' ?; @ < $?C ' <=: ' ; A; =' ?; ' 8=< $?C ' 8>' ?; ' # M8=9 ' ?; ' F <A; 9 ' E< %8 9 ' E ?8' @ ;>; ; : ' ; M% ;' 8' 9 <A; C ' >8G= : ' <' 9; $G ;' ; >GB; ' %=' ?; ' 8G= <%=9' 8>' < ; 9' D ?; ' ; G$ <= ' 9GF %99%8=' 8>' 8 =E< ' E<9' : ; <C; : ' >8 ' 98 ;' <B ; 9D Z1# <=: ' <' F<=: ' 8>' >GB% %A; 9' <$JG% ; : ' <' 9; ; =' %=' 6<G ' FC' ?; % ' 8E=' A< 8G ' 8 ' ?; ' %F; < % C' 8>' ?; ' ; 8A%=B%<=' H%=B9 Z11' IIB' ; 9 ; =' <=B ; ' 8>' 8 %$<' <$JG% ; :

%*5+ *&*2 ' #&' &96&: ' 1 -("% ' +% & &"9##&#620 ' 0%' >#+' 10&#+*1"% --*2+-' (0% + 3% +, ' , (% ' 3 , %+' &*(++* ' !#"' *' 4 ' H -1%&K (*+-' (0% 4" 1%J 4, ' %+&: ' #" 6+(*+2, #+' ^ 1&*4(#&%-' 4#-(' %, 3 ' 4 ' < .R' &%" (%-' (0% 1*&163-(+1%-' #" (0*-' 9 (("% ' 0%: ' &%' 4&#9 9 "%' +, ' 10 & 1(%&*-(*1J +, ' (0% 0*-(#&* +-' #" (0% ($%"' (0' 1%+(6&: ' 3*20(' 1#+-6"(' -#3% 3 (%&* "-' (0 (' +# "#+2%&' %>*-(

3)2 #&+$ "" $ -' '*+ "": ' -69, 6%, ' 9: ' (0%"-(+' ' D@ . R' $0#' 4" +(%, ' +' +2"*-0' 1#"#+: ' (' >%(%&' +, ' 1#+'*+%, ' (0%' &*(#+-' 9 #+, ' (0%' &*!%&' 3 &' %%' *""* 3 ' #" "3-96&: ' 3 **' *+' (0% 1&*4(#&%-' 4#-(' %, 3 ' 4 ' /G' 0%' -4*&*(' #" ' ? (0% #&+*-0' 8+*20(-' $ -' ,%2& ,%, ' 9: ' -%&!*(6, %J +, ' *(' -0#6", ' -%%3 ' '&# 3 ' (0% #3 +1% #" *&' &*-(& 3 ' (0 (' (0%*&1#$ &, *1%' $ - "3#-(' 4&#!%&9* "

' 0%' %-(9"*-03%+(' #" (0% &*(#+-' *+' C 6" *-' 4&#!%, ' *+' (0% -*>(0' 1%+(6&: ' 9: ' &#1#4*6-' C&%2#&: ' #" 46&-' (0% -%1#+, ' 1#6+1*" #" #$ -' ^ 4 ' / @R' +, ' (0%' "% -(-6-4*1*#6-' #" (0%*& 10&#+*1"%-' +, ' "*!%-' #" - *+(-' 0%' -69-1&*4(*#+' #" ' 9*-0#4

?;‘ =;E‘ <@@; < %8=9‘ 8>‘ E 8 ‘ <=:‘ ?;‘ F ‘ \// 4‘ <=:‘
?;‘ <$<=‘ ‘ <=:9‘ 8>‘ ?;‘ 9%9=%%‘ E; ;‘ >% ;:‘ FC‘ <‘ 9 <=B;‘ @;8@ ;‘
E?8‘ G=:; ‘ ?;‘ <G ?8 % C‘ 8>‘ ?;% ‘ $8G= 9‘ <=:‘ F%9?8@9‘ @ ;9; A;:‘
?;‘ <E9‘ <=:‘ <=BG<B;‘ 8>‘ ?;% ‘ <=$;9 8 9‘ 8‘ ?;‘>;;F ;‘ :;9$;=:N
<= 9‘ 8>‘ 8A%9‘ <=:‘ ?< ; <B=;‘ ?;‘ % 8=9‘ 8>‘ 8 %$<‘ ;>G9;:‘
?;‘ $G9 8 < C‘ %FG ;‘ 9GF:G;:‘ ?;‘ =;%B?F8G %=B‘ :%8$;9;9‘ 8>‘
<==;9‘ ;==;9‘ <=:‘ <= ;9‘ <=:‘ >8 ;:‘ <‘ @8E; >G ‘ ?8GB?‘
A<99< ‘ 9 < ;‘ E?%$?‘ ?<9‘ F;;=‘ G=% ;:‘ 8‘ ?;‘$ 8E=‘ 8>‘ <=$; 111
=‘ <‘ $;= G C‘ 8>‘ @; @; G< ‘ 8 ‘ < ‘ ;<9 ‘ % @ <$<F ;‘ E< ‘ G$?‘
$8G <B;‘ <=:‘ 98 ;‘ 9H% ‘ G9‘ ?<A;‘ F;;=‘ ;M; ;:‘ >8‘ ?;‘ :;>;=$;‘
8>‘ % <%=‘ ; ‘%>‘ ?;‘ ; 8 C‘ 8>‘ % 9‘ $?< @%8=9‘ %9‘ < 89‘ FG %;:‘
%=‘ 8F %A%8=‘ E;‘ =;;:‘ =8‘ ;@%=;‘ 0‘ 9%=$;‘ ;A; C‘ <B;‘ ?8E;A;‘ ;:;9N
% G ;‘ 8>‘ 9$%;=$;‘ 8‘ A% G;‘ 9G>>%$%;= C‘ <F8G=:9‘ E% ?‘ <$ 9‘ 8>‘ F 88:‘
<=:‘ % % < C‘ ;=8E=‘ ?;‘ 8 F‘ 8>‘ 8 % ; ?;‘ 98=‘ 8>‘ 8 0‘
%B; =‘ E<9‘ ; ;$;:‘ 8=‘ ?;‘ < B%=‘ 8>‘ ?;‘ 9;<09?8 ;‘ <9‘ <‘ <=:N
< H‘ >8 %:<F ;‘ 8‘ ?;‘ <M8=9‘ E?8 ‘ ?;‘ ?<:‘ ? %$;‘ A<=JG%9?;:‘
%=‘ ?;‘ >%; :9‘ 8>‘ c;= ‘ F 89%G9‘ G ; %<=‘ E<9‘ :;9$;=:;:‘ >% 8 ‘
<‘ =8F ;‘ >< % C‘ 8>‘ 8 <=9 11T‘ ?%9‘ 8:;9 C‘ E<9‘ ;JG<‘ 8‘ ?%9‘ A< 8G ‘
<=:‘ ?%9‘ A< 8G ‘ % ‘ ?;‘ <9‘ >< <‘ <$ %8= 11T‘ E<9‘ $ 8E=;:‘ E% ?‘ 9@ ;=N
:%:‘ 9G$$;99‘ G‘ ;A; C‘ % %9?‘ =< ;‘ %9‘ ;>><$;:‘ FC‘ ?;‘ % G9 %8G9‘
=< ;‘ 8>‘ . / ?;‘ ?; ;:% < C‘ @ %=$;‘ 8>‘ ?;‘ % G ;9‘ %=‘ 8G ?

#‘ (0% &*(#+-‘ (#‘ (0% ‘*&-‘(‘ 1#6+1*‘‘ #‘‘ #6&-‘^ 7‘. ‘#&‘& (0%&‘. R‘(0% &3:‘#‘‘
#(0 36-‘ +‘#‘(0%‘‘##-%,%1‘ 3 (#+‘#‘‘C*‘‘, -‘^ ‘‘*‘(& +-3 &*+ -4%(%9 +(‘&%4#+%-‘
1‘D/‘4‘ R 3 :‘1#6+(%+ +1% +‘ %3*2& (*#+‘ -‘ % &‘‘:‘ -‘ (0% 3*,,‘%‘ #‘‘ (0% ‘*‘(0
1%+(6&:‘ %:#+,‘(0 (%& ‘(0% &*(#+-‘#‘‘ &3#&*1 ‘1 +‘9%‘‘#6+,‘#+‘:‘*+‘&#3 +1%J
+,‘ ‘ 3‘-6&4&*-%,‘(0 (&‘ 0*(8%&‘^C%+6*+% *-(#&:‘#‘‘(0% &*(#+-‘4‘D . DD R
-0#6‘‘,‘-#‘ ‘ *(0‘6‘‘‘:‘(& +-1&*9% (0%‘2&#--‘*2+#& +1% #‘‘ &(% ‘$0#-% !%+* ‘‘ %&&#&-‘0%
0 -‘-#‘&*2#&#6-‘:‘10 -(*-%,
0% +(*F6*(%-‘#‘‘ , ‘$0*10‘0 !% 9%%+‘ (0% -69)%1(‘%!%+‘ #‘‘4#‘‘*(*1 ‘‘
1#+(&#!%&-:‘ &% *‘‘‘6-(& (%,‘9:‘ ,&* +‘ ‘‘%-*6-‘^ #(*(*‘C ‘‘‘* &63‘-69‘!#1%
, ‘1 ‘4‘ ‘‘###‘ ‘ ,H +!*‘‘‘%‘^ #(*1%‘ ,%‘‘ +1*%++%‘C 6‘‘%‘
1 ‘1! ‘(‘ ! ‘4‘D. ‘D/ ‘/G‘@DG‘ +,‘ (-‘,%
‘H 6&#4%‘‘4‘@ GR‘ #+26%&6%O^‘‘%-1&*4(*#+‘ ,%‘‘‘A& +1%‘(#3‘*‘4‘. .R‘ +,‘
(0% 99%‘ ,% %&(#(‘^ *-(‘ &*(*F6%‘ ,%‘H (9‘‘*--%& %+(‘ ,%-‘ &%(#+-‘ , +-‘‘%-‘C 6‘‘%-‘
D‘!#‘-‘*+‘*D3#‘ &*-‘ @DGR‘ ‘3 :‘ --63%‘(0% 3%&*(‘#‘‘ %> 3*+*+2‘(0% ##*2*+ ‘‘
%!*,%+1% $0*10‘(0%:‘0 !% 4&#,61%,
%,%‘$0#‘*+‘0*-‘10&#+*1‘‘%‘^4‘D R 4‘‘ 1%-‘ 39&#-*6-‘6+,%&‘(0% &%*2+‘#‘‘ Y%+#
^ 7‘.@. . R‘#9-%&!%-‘(0 (0*-‘4 &%+(-‘0 ,‘9%%+‘ HX 4*646& ‘*+,6(*(‘f‘ $0*10‘0%
%>4‘‘ *+-‘*+‘0*-‘%11‘‘%-* -(*1 ‘‘ 0*-(#&:‘9:‘P‘&%2*6 3‘+#3%+‘%(*+-*2+%‘ ‘%&%+(*96-‘!T
^3‘*‘1‘ ‘4‘ <R‘ 0% %>4&%-&*#+‘ #‘‘ %++*6-‘^1‘ . ‘4‘+#‘ %,*(‘ C ‘‘%‘1‘.D‘
4‘ ‘%,‘ #3 3-%+bR‘ *-‘ -(*‘‘‘ 3#&% &*+26‘‘ &‘ P‘ +6-‘ ,% ! ‘2%+(*-‘
#3 +*1-%%-(‘4 (%&‘3%6-f
:‘(0% 6+ +*3#6-‘(‘*#620‘ ,#69(‘6‘‘1#+)%1(6&% #‘‘#6& +(*F6 &* +-‘ 3K
9&#-*6-‘*-‘1#+‘#6+,%,‘$*(0‘ (+‘‘%#,‘$0# ‘!01# ‘‘#-(‘0*-‘#$+‘‘‘*‘‘%‘ +,‘‘*!%‘
(0#6- +,‘#‘‘0*-‘-69)%1(-‘*+‘ ‘9 ((‘‘% 2 *+-(‘ %&,*1‘(0% %-(‘ >#+‘^ 0&#+‘ >#+ I‘
4‘@‘ R
-‘‘ 3‘‘-(& +2%&‘(#‘(0% %‘‘-0‘9 &,-‘ :&,0*+‘‘#3 &10‘+,‘ ‘‘*%--*+‘
3:‘‘*(0‘*+‘(0% %>*-(%+1% +,‘%>4‘‘#*(-‘#‘‘ &(06&‘4&*+1*)* ‘‘:‘&%-(-‘#+‘(0% -*34‘‘%‘ +,‘
1*&%63-(+(* ‘‘(%-(*3#+:‘#‘‘ %++*6-‘^ *-(‘ &*(‘1‘ D‘ <‘4‘ U.R‘ &‘ 0*(8%&

ʻ ʻ ʻ +-+

< ;9ʻ<=:ʻ ?;ʻ ; ;$ %A;ʻH%=BʻB;=; <ʻ8>ʻ ?;ʻ=< %8=ʻ $$8 :%=Bʻ 8ʻ ?;ʻ 89ʻ < %8=<ʻ <$$8G= ʻ?;ʻ :;>;< ;:ʻ%=ʻ E; A;ʻ9G$;99%A;ʻ F< ;9ʻ?;ʻ =B ;9ʻ8>ʻ?;ʻ 8 ?ʻ<=:ʻ?;ʻ <M8=9ʻ8>ʻ ?;ʻ #9 0ʻ FGʻ ?;ʻ :;$%=%=Bʻ<B;ʻ 8>ʻ ?;ʻ?; 8ʻE<9ʻ; F% ; ;:ʻFCʻ@8@G <ʻ %=B < % G:;ʻ<=:ʻ:8 ;9 %$ %9>8 G=;9ʻ ?;ʻ;A;= 9ʻ8>ʻ?%9ʻ %>;ʻ< ;ʻ ;99ʻ%= ; ;9 %=Bʻ ?<=ʻ ?;ʻ9%=BG <ʻ ;A8 G %8=9ʻ8>ʻ?%9ʻ>< ;ʻ ? %=Bʻ <ʻ@; %8:ʻ 8>ʻ>%A;ʻ ?G=: ;:ʻC;< 9ʻ ?;ʻ <:% %8=ʻ 8>ʻ ?%9ʻ;M@ 8% 9ʻE<9ʻ @ ;9; A;:ʻ<=:ʻ G:;Cʻ; F; %9?;:ʻFCʻ ?;ʻ8F9$G ;ʻF< :9ʻ8>ʻ < ;9ʻ <=:ʻ 8 %$<ʻ E?8ʻE; ;ʻ8:%8G9ʻ 8ʻ ?;ʻ <M8=9ʻ<=:ʻ G=H=8E=ʻV/ ?;ʻ ;9ʻ8>ʻ <=H%=:ʻ ?;ʻ@ %:;ʻ<=:ʻ $G 89% Cʻ8>ʻ ?;ʻ $8=JG; 8 9ʻ@ 8 @ ;:ʻ ?; ʻ 8ʻ;=JG% ;ʻ%= 8ʻ ?;ʻ<=$%;=ʻ?%9 8 Cʻ8>ʻ % <%=ʻP ?;Cʻ %9 ;=;:ʻE% ?ʻ>8=:ʻ$;:G % Cʻ 8ʻ ?;ʻ < ;ʻ8>ʻ ?G ʻ <=:ʻ;<B; Cʻ<@@ <G:;:ʻ ?;ʻ ; %ʻ8>ʻ<ʻ@ %@$;ʻE?8ʻ?<:ʻ %G @?;:ʻ 8A;ʻ ?;ʻ <M8=9ʻ ?;% ʻ $8 8=ʻ;=; %;9ʻ %9ʻ 8 <=$;ʻ ;@11ʻ 9$ %F;:ʻ %=ʻ ?;ʻ < %=ʻ8>ʻ W;>> ;Cʻ8>ʻ 8= 8G ?ʻ<=:ʻ<> ;E< :9ʻ <=9< ;:ʻ%=8ʻ?;ʻ><9?%8=<F ;ʻ%:%8 ʻ8>ʻ ?;ʻ % ;9ʻE<9ʻ;=%$?;:0ʻ E% ?ʻ ?;ʻA< %8G9ʻ ?8GB?ʻ%=$8?; ;= ʻ 8 =< ;=9ʻE?%:%ʻE; ;0ʻ >< % %<ʻ 8ʻ ?;ʻ ;M@; %;=$;ʻ ?;ʻ ;< =%=B ʻ8ʻ ?;ʻ><=$Cʻ8>ʻ ?;ʻ E;>?ʻ $;= G Cʻ ?;ʻ@ 8B ;99ʻ8>ʻ<ʻ ? CB%<=ʻ$8 8=Cʻ> 8 ʻ I Tʻ %F;ʻ 8ʻ ?;ʻ ?< ;9ʻE<9ʻ;<9% Cʻ;%#@=> ;:ʻ 8=ʻ ?;ʻ><F ;ʻ8>ʻ#314ʻ, %=;%:0ʻ <=:ʻ ?;ʻ 8C<ʻ <=$;9 8 9ʻ8>ʻ ?G ʻ:; %A;:ʻ ?;>ʻ 8 %B%=ʻ > 8 ʻ 8Cʻ <=:ʻ$ <% ;:ʻ ?;% ʻ < %<=$;ʻE% ?ʻ ?;ʻ 9;9< ʻ ?1ʻ 8@?%;9ʻ E; ;ʻ :;$8 < ;:ʻE% ?ʻ $<@ %A;ʻ @ 8A%=$;9ʻ <=:ʻ0ʻ @; %<ʻ % ;9 0ʻ <=:ʻ ?%9ʻ <=%9?ʻ A%$ 8 %;9ʻ<A;=B;:ʻ ?;ʻ ;$;=ʻ %=IG %;9ʻ8>ʻ ?%9ʻ$8G= Cʻ ?;ʻB< <= Cʻ<=:ʻ9G@; 9 % %8=ʻ8>ʻ ?;ʻ % %9?ʻF; %I ʻ ?%9ʻ>;<9 9ʻ<=:ʻ 8G =< ;= 9ʻ<=:ʻ ?;ʻ ; 8 <F ;ʻ%=9 % G %8=ʻ8>ʻ?%9ʻ ʻ 8>ʻ ?;ʻ " ʻ , 0ʻ E; ;ʻ ><% ?>G Cʻ $8@%;:ʻ > 8 ʻ ?;ʻ ;%B=%=Bʻ <==; 9ʻ8>ʻ$?%A< C0ʻ<=:ʻ ?;ʻ><FG 8G9ʻ;M@ 8% 9ʻ8>ʻ ?; %9ʻ 98=ʻ <@@;<ʻ ;99ʻ %=$;:%F ;ʻ ?<=ʻ ?;ʻ <:A;= G ;9ʻE?%$?ʻ E; ;ʻ <$?%;A;:ʻFCʻ ?;ʻ;= ; @ %9%% B A< 8G ʻ8>ʻ ?;ʻ 8 <=9ʻ % B%?=<B;ʻ <=:ʻ ?;ʻ?8 Cʻ E< 9ʻ%= 8:G$;:ʻ%= 8ʻ G 8@;ʻ ?;ʻ9@;$%8G9ʻ >% <$;9ʻ 8>ʻ <F%<=ʻ <B%$ʻ <% %;9ʻ<=:ʻ B%<= 9ʻ>C%=Bʻ#B8=9ʻ<=:ʻ ;=1ʻ $?<= ;:ʻ@< <$;9ʻE; ;ʻ F ;=:;:ʻE% ?ʻ ?;ʻ ;ʻ 9% @ ;ʻ >%; % % 9ʻT>ʻ ?;ʻ ;9 0ʻ <=:ʻ ?;ʻ>< ;ʻ8>ʻ % <%=ʻ:;@;=:;:ʻ 8 ʻ ?;ʻ< ʻ8 ʻ ?;ʻ @ ;:%$ %8=9ʻ 8>ʻ ; %=ʻ A; Cʻ =< %8=ʻ ; F <$;:ʻ <=:ʻ<:8 ;)ʻ ?;ʻ@8@G <ʻ 8 <=$;ʻ8>ʻ ?G ʻ<=:ʻ ?;ʻ c=%B? 9ʻ8>ʻ ?;ʻ 8G=:ʻ <F ;0ʻ ?;%ʻ=< ;9ʻE; ;ʻ$; ;F < ;:ʻ%=ʻ6 ;;$;ʻ<=:ʻ <Cʻ0ʻ< >ʻ ?;ʻ A8 G %=8G9ʻ < ;9ʻ8>ʻ % ʻ <=$; 8 ʻ <=:ʻ % ʻ %9 < ʻ E; ;ʻ :;A8G Cʻ9 G:%;:ʻFCʻ ?;ʻ@ %=$;9ʻH=:ʻ=8F ;9ʻE?8ʻ:%9 ;B< :;:ʻ ?b ʻ B;=G%=;ʻ?; 8;9ʻ<=:ʻ?%9 8 %<=9ʻ8>ʻ <= %JG% Cʻ ʻ ; J# ?ʻ ?;ʻ #?

^ *-(ʻ#"ʻ +10%-(%&ʻ!#"ʻ**ʻ 4ʻ< 5@ R 0 -"ʻ& 3%,ʻ +ʻ*+(%&%-(*+%ʻ +,ʻ%!%+ʻ4&#9 %ʻ + && (*!%ʻ#"(0%ʻ$ &-ʻ#" . ʻ(0**&J (0#620ʻ*(ʻ *344--*0*%ʻ'#ʻ ""4$ʻ (0%ʻ"% 0(:ʻ "(04ʻ &#6+.ʻ(9'%

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8>ʼ $%;=$;ʼ <= :ʼ ;<98=ʼ <9ʻ ;%: < : ;: Dʻ ?;ʼ < %9 <=ʼ E<9ʻ F 8H;=D ?;ʼ A%9%8=< Cʻ (FS#;ʼ ; ;:ʼ%= 8ʻ 9 % Dʻ <=: ʼ FCʻ <ʼ =< G < ʼ ?8GB?ʻ G=IG9 ʼ%0;A; 9;ʼ 8>ʼ ?;ʼ @GF %$ʻ 8@%=%8= ʼ ?;ʼ 9;A; % Cʻ 8>ʼ ?;ʼ @ ;9;= ʼ <B;ʼ %9ʻ %=$ %=; :ʼ 8ʻ JG;9 %8=ʼ ?;ʼ 8>ʼ ?G 0#'

:ʼ ;%9 <=$;ʼ %>ʼ % ʼ $<==8 ʼ <A; ʼ G9 ʼ%=$;<9;ʼ ?;ʼ %9; %;9ʻ 8>ʼ $8=JG;9 ʼIʻ <=:ʼ $8=JG;9 ʼ ?<9ʻ=;A; ʼ<@@;< ;:ʼ 8 ;ʼ : ;<:>G ʼ <=:ʼ : ;9 G$ %A;ʼ ?<=ʼ %?ʼ ?;ʼ ?<=:9ʻ 8>ʼ ?;ʼ <M8=9ʼ E?8ʻ ?< ;:ʼ ?;ʼ A< 8G ʼ 8>ʼ ?;% ʼ ;=; %;9ʼ :%9:<%=;:ʼ ?;ʼ ><% ?ʼ 8>ʼ ;< %;9ʼ <=:ʼ A%8 < ;:ʼ E% ?8G ʼ ; <8 ;;ʼ ?;ʼ 89ʼ 9<$;:ʼ 8FI;$ 9ʻ 8>ʼ ?;ʼ ? %9 %<=ʼ E8 9?%@ʼ ?;ʼ>%; :9ʻ 8>ʼ F< ;ʼ %B? ʼ F;ʼ <$;:ʼ< 89 ʼ %=ʼ;A; Cʻ :%9 %$ ʼ FCʻ 8=G ;=9ʻ 8>ʼ F8=;9D ?;ʼ> <B ;=9ʻ 8>ʼ>; N %=Bʼ 8E;9ʻ E; ;ʼ 9 <%=;:ʼ E% ?ʼ F 88:D ?;ʼ <9ʼ 8>ʼ ?;ʼ, % 8=9ʼ E% ?8G ʼ:%9 %=$ %8=ʼ 8>ʼ<B;ʼ8 ʼ 9;Mʼ E; ;ʼ <99<$;:ʼ %=ʼ ?;ʼ G%=9ʻ 8>ʼ =:; %:<ʼD#ʻT <=:ʼ ?;ʼ ;@; % %8=ʼ 8>ʼ 9G$?ʼ $<< % %;9ʻ E<9ʻ> ;N JG;=ʼ <=:ʼ>< % %< ʼ G=:; ʼ ?;ʼ <M8=ʼ ?;@< $?Cʻ ?;ʼ < 9ʻ <=:ʼ ; %B%8=ʼ ?;ʼ <E9ʻ <=:ʼ <=BG<B;ʼ E?%$?ʼ ?;ʼ 8 <=9ʻ ?<:ʼ98ʻ $< ;N >G Cʻ @ <= ;:ʼ %=ʼ % <%=ʼ E; ;ʼ ;M % @< ;:ʼ FCʻ ?;% ʼ F< F< 8G9ʻ 9G$$;998 9ʼ > ; ʼ ?;ʼ:;9 G$ %8=ʼ 8>ʼ ?;ʼ@ %=$%@<ʼ $?G $?;9ʻ ?;ʼ F%9?8@9ʻ E?8ʻ ?<:ʼ:;$ %=;:ʼ ?;ʼ$ 8E=ʼ 8>ʼ < C :8 ʼ ; % ;:ʼ E% ?ʼ ?;ʼ ?8 Cʻ ; %$9ʻ %= 8ʻ < ;9ʻ <=:ʼ 8 %$<Dʼ ?;ʼ ; <%=9ʻ 8>ʼ ?;% ʼ> 8$H9ʻ E; ;ʼ ;> ʼ :;9 % G ;ʼ 8>ʼ <=Cʻ 9@% % G<ʼ >88:Dʼ ?;ʼ @ <$ %$; ʼ <=:ʼ;A;=ʼ ?;ʼ ; ; F <=$;ʼ 8>ʼ ? %9 %<=% Cʻ E; ;ʼ <F8 %9?;:ʼDʼ;=:ʼ ?;ʼ % %9?ʼ $; BCʻ %B? ʼ 8F <%=ʼ 98 ;ʼ $8 >8 ʼ > 8 ʼ ?;ʼ :< =<N %8=ʼ 8>ʼ ?;ʼ%:8 < 8G9ʻ 9 <=B; 9ʼ ?;ʼ H%=B9ʻ 8>ʼ <=$;ʼ <%= <%=;:ʼ ?;ʼ @ %A% ;B;9ʻ 8>ʼ ?;% ʼ 8 <=ʼ9GFI;$ 9ʻ FG ʼ ?;ʼ>; 8$%8G9ʻ <M8=9ʻ < @ ;:ʼ 8=ʼ ?;ʼ <E9ʻ 8>ʼ 8 ;ʼ <=:ʼ 8>ʼ ?;ʼ; @; 8 9ʼ ?;ʼ I=08D $;;:%=B9ʻ 8>ʼ $%A% ʼ <=:ʼ $ % %=<ʼ IG %9:%$ %8=ʼ ?;ʼ % ;9ʻ 8>ʼ ? %8G ʼ ?;ʼ>8 9ʻ 8>ʼ 8>>%$;ʼ ?;ʼ <=H9ʻ 8>ʼ 98$%; Cʼ <=:ʼ ;A;=ʼ ?;ʼ :8 ;9 %$ʻ %B? 9ʻ 8>ʼ < %<B;ʼ ;9 < ;= ʼ <?:ʼ %=?; % <=$;D E; ;ʼ >%=< Cʻ 9G@@ ;99;:D <=:ʼ ?;ʼ %=:%9$ % %=< ;ʼ $ 8E:ʼ 8>ʼ =8F ;ʼ <=:ʼ @ ;N F;%<=ʼ 9 <A;9ʻ E<9ʻ B8A; =;:ʼ FCʻ ?;ʼ <:% %8=< Cʻ $G9 8 9ʻ E?%$?ʼ ?<:ʼ F;;=ʼ $8< 9; Cʻ > < ;:ʼ >8 ʼ ?;ʼ 9?;@?; :9ʻ <=:ʼ @% < ;9ʻ 8>

3)" 0,ʼ4&#2&%-:ʼ #'ʼ &#3 +1%ʼ +,ʼ *%-((%#'ʼ"% &+*+2ʼ*+ʼ (0%ʼ3*, ,"%ʼ 2% ʼ &%ʼ*""6-(& (%,ʼ9:ʼ &ʼ 0#3 -ʼ 0 &(#+ʼ$*(0ʻ (0%ʼ(-(%ʼ "ʼ 4#%ʻ +,ʼ (0%ʼ3*+6(%ʼ,*"*K 2%+1%ʼ#'ʼ +ʼ +(*F6 &* +ʼ ʼ0 !%ʼ,%&*!%,ʼ3*"10ʼ *+-(&61(*#+ʼ'#ʼ3ʼ (0%ʼ ($#ʼ"% &+%,ʼ ,*--%&((*#+-ʼ4&%'*>%,ʼ(#ʼ(0%ʼ'*&-(!#"63%#*'0*-ʼ *-(#&:'#'' +2"*-0ʻ #%(&: 3)* #1ʼ ++#^. GR" "ʼ%(*-- ʼ#9-%,%&6+(ʻ +,&%,%- % -(%&J %(ʼ*+(%&'%1%+*6(ʻ #3+%-ʼF"*#ʼ*,ʼ*+1#"6%&6+(J ,%# 6(ʻ+%6+6-ʼ &*(#*9ʼ -64%&-(%-ʼ'6%&*(ʼ^ 0&#+ʼ >#+ʼ 4ʼ /R ʼ +ʼ%>4&%--*#+ʼ3#&%ʼ,&% ,ʼ6"#+ʼ*(-ʼ-*34"*1*(:ʼ(0 +ʼ "(ʻ(0%ʼ! 26%ʼ +,ʼ(%,*#6-ʼ " 3%+((*#+-ʼ#"(00ʻ &*(*-0ʻ %&%3* 0

3*S +,&%,%% % -(#&ʼ #&ʼ +,%&*, ʼ*-ʼ 4" 1%,ʼ F& 3,%+ʼ^ &*(++* ʼ!#"ʼ ʼ Vʼ D/ Rʼ (%$%+,%+ʼ *+ʼ (0% 3 &&**:ʼ2&#6+,-ʼ#'' =%+(ʼ $0*10ʻ 3*20(ʻ 9%ʼ'#&3%&":ʼ 1#!%&%,ʼ 9:ʼ(0% % ʼ +,ʼ #+ʼ (0% %,5ʼ#'ʼ(0% 2&% (ʼ'#&%-(^ +,%&*, Rʼ $0*10ʻ#!%&K -4&% ,ʼgG" &2%ʼ 4#&(*#+ʼ#'' 34-0*&%ʼ +,ʼg6--%>ʼ ʼ 0%ʼ'#&(#'' +,%&*, ʼ$ -ʼ (%!%+-%:ʼ4+ʼ(0% 6--%>ʼF# -(ʼ M ʼ &ʼ 0!%&**%",!-ʼ 3 4ʼ#'' #3 +ʼ &*(*+ʼ(# ##"%!-ʼ *-(ʼ (" -ʼ4'' #,%&+ʼ 6&#4% b

6 ; <=C ʿ ? ;ʿ <=BG<B;ʿ 8>ʿ B$%#$; 1ʿ 8>ʿ FG9%=;99ʿ <= :ʿ 8>ʿ $8=0ʿ A; 9< %8=ʿ E ?%$?ʿ ?<:ʿ F ; ;=ʿ %= 8 : G$; :ʿ FCʿ ? ;ʿ 8 <=9ʿ E<9ʿ 89ʿ %=ʿ ?;ʿ B ; = ; <ʿ : ;98 < %8=ʿ ʿ 9G>>%$%;=ʿ=G F ; ʿ 8>ʿ < %=ʿ >ʿ ; %$ʿ E8 :9ʿ %B? ʿ F ;ʿ <99G ; :ʿ FCʿ ? ;ʿ 6 ; <=9ʿ 8ʿ ;M@ ;99ʿ ? ;% ʿ=; Aʿ E<= 9ʿ <=:ʿ %: ;<9ʿ FG ʿ ?89 ;ʿ ʿ <B<=9ʿ @ ;9 ; A ;:ʿ <=:ʿ ;9 <F %9?;:ʿ ?;ʿ G9 ;8>ʿ ?;% ʿ=< %8=<ᴺ :%< ;$ ʿ 89ʿ ;A ; Cʿ =< ;ʿ $8=9@%$G8G9ʿ ;% ?;ʿ %=ʿ ?;ʿ $?G $?ʿ 8ʿ 9 < ;ʿ ;A ;<9ʿ % 9ʿ ;G 8=%$ʿ 8 %B%=0 <=:ʿ ?;ʿ B ;8B <@?Cʿ 8>ʿ # ʿ E<9ʿ G=%A ; N 9< Cʿ %=9$ %F ;:ʿ E% ?ʿ >8 ;%B=ʿ $?< <$; 9ʿ ʿ<=:ʿ <@@ ; < %8=9ʿ ?;ʿ ;M< @ ;ʿ 8>ʿ<ʿ ;A8 G %8=ʿ 98ʿ <@%:ʿ <=:ʿ 98ʿ $8 @ ; ;ʿ <Cʿ =8ʿ ;<9>%Cʿ F ;ʿ >8G=:0 FG ʿ % ʿ E% ʿ ;M$%;ʿ <ʿ @ 8F<F ;ʿ 9G9@%$%8=ʿ ?<ʿ ?;ʿ <9ʿ 8>ʿ 8 ;ʿ E ;ʿ ;99ʿ :;;@ Cʿ 88 ;:ʿ %=ʿ % <%=ʿ ?<=ʿ %=ʿ 6<G ʿ 8ʿ @<%=0 <=:ʿ ?<ʿ ʿ ?;ʿ =< %A ;ʿ G:;=;99ʿ 8>ʿ ?;ʿ $8G= Cʿ <=:ʿ % 9ʿ %=N ?<F% <= 9ʿ E<9ʿ $8A ; ;:ʿ FCʿ <ʿ ?%=ʿ <=%9?ʿ 8>ʿ <%<=ʿ <==; 9

?%9ʿ 9 <=B;ʿ < ; < %8=ʿ ?<9ʿ @ ; 9G<:;:ʿ ?%9 8 %<=9ʿ <=:ʿ ;A ;=@?% 898@?; 9ʿ ?<ʿ ?;ʿ @ 8A%=$%<9ʿ 8>ʿ % <%=ʿ E ;ʿ 8 < Cʿ ;M ; N %=< ;:0 <=:ʿ ?<ʿ ?;ʿ A<$<=ʿ <=:ʿ E<9ʿ <B<%=ʿ@;8@ ;:ʿ FCʿ ?;ʿ@ ; N @ ; G<ʿ %=> GMʿ <=:ʿ <@%:ʿ %=$;<9;ʿ 8>ʿ ?;ʿ 6 ; <=ʿ $8 8=%;9ʿ ? ;;ʿ ?G=: ;:ʿ ?8G9<=:ʿ <M8=9ʿ < ;ʿ J ʿ 8ʿ ?<A;ʿ 8F ;C ;:ʿ ?;ʿ 9G 8=9ʿ 8>ʿ ;=B%9 0 ?;ʿ ;= % ;ʿ ; %B < %8=ʿ 8>ʿ ?;ʿ =B ;9ʿ E<9ʿ < ;9 ;:ʿ %=ʿ ?;ʿ <B ;ʿ 8>ʿ ; :ʿ FCʿ ?;ʿ 98 % G:;ʿ 8>ʿ ?;% ʿ=< %A;ʿ $8G= Cʿ <=:ʿ 8G ʿ ;M@ ; %;=$;ʿ ?<9ʿ 9?8E=ʿ ?;ʿ> ;;ʿ@ 8@<B< %8=ʿ8>ʿ ?;ʿ ?G <=ʿ <$;ʿ %>ʿ ?;Cʿ <ʿ ;ʿ $<9ʿ 8=ʿ<ʿ> G% >Gʿ E% :; =;99ʿ E ?;ʿ ?;% ʿ 9 ;@9ʿ < ;ʿ G=$8= %=;:ʿ <=:ʿ ?;% ʿ 9GF9%9 ;=$;ʿ %9ʿ @ ;= %>G ʿ ?;ʿ <M8=ʿ H%=B:8 9ʿ :%9@ <C;:ʿ ?;ʿ><$;ʿ8>ʿ ;$;=ʿ:%9$8A; Cʿ <=:ʿ $G %A< %8=ʿ0 ?;ʿ 8E=9ʿ E ;ʿ ;9 < ʿ ?;ʿ A% <B;9ʿ E ;ʿ :%9 <= 0 ?;ʿ ?G9F<=:Cʿ E<9ʿ <=BG%:ʿ <=:ʿ G=9H% >G 0 >8G ʿ 9?;;@ʿ E ;ʿ ;JG%A< ;=ʿ 8ʿ <=ʿ <$;ʿ 8>ʿ ?;ʿ F ;9ʿ <=:0 <=ʿ < @ ;ʿ 9@<$;ʿ8>ʿ E8@:ʿ <=:ʿ 8 <99

7&ʿ #0+-#+ʿ ''*&3-ʿ(0 (L ! ʿ +2"*-0ʿ $#&,-ʿ &%ʿ#'ʿ &*(*-0ʿ %>(& 1(*#+ʿ &ʿ H 0*(8%&ʿ $0#ʿ 6+,%&-(+,-ʿ(0% &*(*-0" +26 2% ʿ0 -ʿ ,*-1#!%&%,ʿ 3#&%ʿ(0 +ʿ =ʿ ! ʿ +,ʿ 1(6 "":ʿ4&#,61%-ʿ ʿ"#+2ʿ +,ʿ! &*#6-ʿ1 ("#26%ʿ^!#"ʿ*ʿ4ʿ - 5 52R' (*-ʿ4#--*9"%ʿ*+,%%,ʿ(0 (3 +:ʿ#" (0%-%ʿ$#&,-ʿ3 :ʿ0 !%ʿ 9%%+ʿ*34#&(%,ʿ&ʿ'"ʿ(0% (*+ʿ#& >#+ʿ*+(#ʿ(0% + (*!%ʿ*,*#3ʿ#" &*(*+

(Sʿ +ʿ(0% 9%2*++*+2ʿ #'ʿ(0% -%!%+(0ʿ1%+(6&:ʿ(0% A& +8-ʿ +,ʿ(0% +]J"# >#+-ʿ 36(6 "":ʿ6+,%&-(##,ʿ % 10ʿ #(0%&!-ʿ " +26 2% ʿ $0*10ʿ $ -ʿ ,%&*!%,ʿ'&4+ʿ(0% - 3% %6(#+*1ʿ&##(^ %,%ʿ3ʿ*ʿ1ʿD/ʿ4ʿ GR

/< '(%&ʿ(0% '*&-(2%+%& (*#+ʿ #'ʿ ("* +ʿ#&ʿ 1#((*-0ʿ 3*--*#+ &*%-ʿ(0% ,*2+*(*%-ʿ "(0% 06&10ʿ$%&%ʿ'*"%,ʿ$*(0ʿ >#+ʿ4&# %")H(%

('(&(%!-ʿ *-(#&:ʿ#'ʿ +2" +,ʿ!#"ʿ*ʿ4ʿ /ʿ %ʿF6#(%-ʿ(0% &*(*-0ʿ0*-(#&* +-J 96(ʿ 3610ʿ>;<ʿ(0 (%''&%:ʿ#'ʿ #+3#6(0ʿ^3ʿ !*ʿ1ʿ /R *-ʿ0*-ʿ#+":ʿ!)*(+%-- ʿ

('- %,%ʿ *-(11"%-* -('ʿ3ʿ*ʿ %ʿ 5ʿ4ʿ/Dʿ 0%ʿ1(*-ʿ4&#9 9"%ʿ +,ʿ $%"" ((%-(%,0 :%(-610ʿ $ -ʿ(0% "##-%ʿ*+(%&3*>(6&%#'ʿ(0% C%&3 +ʿ(&*9%-ʿ(0 (i % '*+,ʿ *+ʿ ʿ-69-%F6%+(4%&*#,ʿ(0%" $'#"ʿ(0% +2 ʿ +,ʿH &*+#'ʿC%&3 +:ʿ^ *+,%+9& 2ʿ 4,%>ʿ4ʿ.@ .5R

"0 % ʿ 7&ʿ %+&:T-ʿ 6-%'6" +,ʿ" 9#&*#6-ʿ *-(#&:ʿ#'ʿ C&% (&*(*+ʿ !#"ʿ*)ʿ 4

+ - , ‘ ‘ ‘ ‘

<b‘ ; 9%B=; :‘ 8‘ ? ;‘ A<BG;‘ : 8 %=%8=‘ 8>‘ =< G ;‘ ‘ <=:‘ ?;‘ 8: ; =‘ ?%9FR# %;‘ 8>‘ G ?< ‘ ?;‘ E?8 ;‘ ; % 8 C‘ > 8 ‘ ?;‘ C=;‘ 8‘ ?;‘ ; ;9 ‘ ?<:‘ ; G =; :‘ 8‘ % 9‘ @ % % %A;‘ < ;‘ 8>‘< 9<A<B;‘ <=:‘ 98 % < C‘ >8 ;9 #1# G$?‘ % @; >;$ ‘ @8@G < %8=‘ %B? ‘ ?<A;‘ F; ;=‘ 9G@@ %; :‘ %=‘ 98 ;‘ B; =; < %8=9‘ FC‘ ?;‘ =B %9?‘ $8 8=%; 9‘ D FG ‘ =;% ?; ‘ ;<98=‘ =8 ‘ ><$ 9‘ $<=‘ IG9 %>C‘ ?;‘ G < G < ‘ 9G@@89% %8=‘ ?< ‘ ?;‘ <M8=9‘ % <%=‘ ; <%=; :‘ < 8=;‘ %=‘ ?;‘ :;9; ‘ E?%$?‘ ?;C‘ ?<:‘ 9GF:G; :‘ > ; ‘ ?;‘ 9<=BG%=< C‘ < F< %<=9‘ ?<:‘ 9;$G ;:‘ ?;% ‘ :8 %=%8=‘ <=:‘ B < %>%;:‘ ?;% ‘ ;A;=B;‘ % ‘ E<9‘ ?;% ‘ %= ; ;9‘ 8‘ @ ;9; A;‘ ?;‘ @;<9<= 9‘ <9‘ E ; ‘ <9‘ ?;‘ $< ;‘ 8>‘ ?;‘ G= ;9%9 %=B‘ $8G= C‘ =‘ ;<$?‘ 9G$$;99%A;‘ ;A8 G %8=‘ ?;‘ @< %;= ‘ ?; :‘ F;$8 ;9‘ ?;‘]@ 8N @; C‘ 8>‘% 9‘ =; E‘ <9 ; 9D <=:‘ ?;‘ 9< G < C‘ $8 @<$ ‘ 8>‘ >88:‘ <=:‘ <F$#‘ % D 9% ;= C‘ < %>%;:‘ FC‘ ?;% ‘ G G< ‘ =;$;99% %;9‘ % > %: ‘ ?;‘ <@89 ;‘ 8>‘ G99;M #T‘ <$$;@ ; :‘ > 8 ‘ ?%9‘ 8C< ‘ $8=A; ‘ ?;‘ B%>‘ 8>‘ ?;‘ @;=%=9G <‘ 8> ; 9;C ‘ =;< ‘ ?%$?;9 ; ‘ E% ?‘ ?;‘ @; 98=9‘ <=:‘ @ 8@; C‘ 8>‘% 9‘ %=?<F% <= 9‘ E?8‘ ?;=‘ < 8G= ;:‘ 8‘ ;%BW% C09;A;=‘ >< % %;9‘ ;‘ ; ;<9;:‘ ?; ‘ < ‘ 8=$;‘ > 8 ‘ 9@% % G< ‘ <=:‘ ; @8 < ‘ F8=:<B;D <=:‘ E8‘ ?G=: ;:‘ <=:‘ >%> C‘ 9 <A;9‘ 8>‘ F8 ?‘ 9;M;9‘ E; ;‘ F# %9; :‘ 3#‘ ?;% ‘ %=:G B % ‘ <9 ; ‘ ?;‘ H%=B:8 ‘ 8>‘ G99;M‘ E?%$?‘ 9@ ;<:‘ > =‘ ?;‘ 9;<‘ 8‘ ?;‘ ?< ;9‘ $8= <%=;:‘ 9;A;=‘ ?8G9<=:‘ >< % %;9D E; A;‘ ?G=: ;:‘ ; ;‘ <9$ %F;:‘ 8‘ ?;‘ 9 ;‘ 8>‘ %B? D <=:‘ %>‘ E;‘ G %@ C‘ ?%9‘ A<BG;‘ $8 @G < %8=‘ % ‘ <C‘ 9;;=% @ 8F<F ;‘ ?< ‘ =B <=:‘ E<9‘ $G %A< ;:‘ FC‘ <‘ % %8=‘ 8>‘ 9; A<= 9D 8 ‘ ' ‘ E?8‘ E; ;‘ < <$?;:‘ 8‘ ?;‘ ;9 < ;9‘ 8>‘ ?;% ‘ < F% < C‘ <=: 8 :9‘ ?;‘ %=:%B;= ‘ < F< %<=9‘ E; ;‘ 8> ;=‘ ; @ ;:‘ 8‘ 9; ‘ ?;% ‘ $?% : ;=‘ 8 ‘ ?; 9; A;9‘ %= 8‘ @;%@; G< ‘ <=:‘ ;A;=‘ >8 ;%B=‘ F8=:<B;DZ11‘ C; ‘ ?;‘ 9@;$%< ;M; @ %8=9‘ E?%$?‘ E; ;‘ B <= ;:‘ 8‘ ‘ 9 <A;9‘ %TT‘ 9G>>%$%;= C‘ :;$ < ;‘ ?< ‘ ?;C‘ E ;‘ G$?‘ ;99‘ = ; 8G9‘ ?<=‘ ?;‘ 9 <=B; 9‘ <=:‘ $<@ %A;9‘ E?8‘ ?<:‘ 89 ‘ ?;% ‘ %F; C‘ 8 ‘$?<=B;:‘ ?;% ‘ <9 ; 9‘ FC‘ ?;‘ <$$%:;= 9‘ 8>‘ E< ‘ ?;=‘ % ;‘ <=:‘ ; %B%8=‘ ?<:‘ % %B< ;:‘ ?;‘ >%; $;‘ 9@% % ‘ 8>

‘ \6*#F6*,‘ ^- :-‘ #0+‘ #‘' *+%* #6(0 ‘*+(%&‘ :+ 3‘ %(%- *&('"6!*#-‘ %>(*(*(#0(%&% 3*‘ ! -(*(6,# (#+%‘ (% 3 4#&*-‘ !*"*‘ ' (*,%*&%# + ""*+-‘ ,*(*#+*‘ %&!*!*(‘ %#‘ F6#, -#"‘ +,#3*(#&6 3‘ %(-:"!%-(&*6&# +*3 "*6 3‘ -4%"6+1 ‘%(0 9*((*#‘ ! *(^ 46,‘ +% ‘ !#R‘ *‘ 4‘ *4 R‘ A&# 3‘ 9*-0#4‘ *10#"-#+‘ ^ +2"*-0‘ *-(#&*1 '‘ *9& 5 ‘4‘ / ‘ R ‘ 6+,%&K -(+,‘ (0 (‘ ‘ *&‘ 1#‘ (*%-#"‘ #)()+‘ #"‘ *+% 3#6(0T-‘ 3 4"%‘ #""%1(*#+-‘ &%‘ 4&%-%&!%,‘ *+‘ (0%"*9& &*%-‘ #"‘)('#&, ‘ *+9%(0‘ E1

S‘ %%‘ (0% 3*--*#+‘ #‘' *"'&*, ‘ E1‘ *"‘ %, %‘ *-(‘ 11"%-‘ (‘ *! ‘ 1‘ <‘ (‘ 4‘

(-V &# 3‘ (0% 1#+16&&%+((%-(* 3#+:‘ #‘' %, %‘ ^*‘ **‘ 1‘ *‘ 4‘ @ R +,‘ (* *6#‘' "3-96&:‘ ^ ‘ ***‘ 4‘ G<R *(44% &-‘ (0 ((0% +2"# >#+-‘ '&# 3‘ (0% '*&-((#‘ (0% " -(2% ‘ 4%&-*-(%,‘ *+‘ (0*-‘ 6+0 (6& * 4& 1(*1% ‘ 0%*&‘ :#6(0-‘ $%&%‘ 469"*1":‘ #",‘ *+‘ (0% 3 &8%(#‘' #3%

N% 11#&,+2‘ (# (0% " $-‘ 4‘' + ‘ (0%:‘ 1#6",‘ +#(9% $'6"(:‘ -#",‘ 95#+,‘ *0%

?;ʻ =B 80 <M8=9ʻ ?;ʻ <Egʻʼnʻʻnʻʻ$8G <B (:ʻ ?;ʻ > ;JG;=ʻ@ <$ %$;ʻ 8>ʻ
<=G %99%8=ʻ Ð <=:ʻ ?;%ʻ 9GFI;$ 9ʻ 8>ʻ ; 9?ʼ 8ʻ G F %<=ʻ;M <$N
%8=ʻ <99G ;:ʻ ?;ʻ ;9@;$ <F ;ʻ 9 < %8=ʻ 8>ʻ %=>; %8ʻ > ;; ;=ʻ @89N
9;99;:ʻ 8>ʻ <=:gʻ<=:ʻ%= %;:ʻ 8ʻ ?;ʻ %B? gʻ8>ʻ$%A%ʻ98$%; CʻE ʻ <;?ʼ
B;= ;ʻ ;< ;=ʻ %B? ʻ9;$G ;ʻ ?;ʻ< ;B%<=$;ʻ8>ʻ<ʻ>%; $;ʻ @;8@ ;ʻ
E?8ʻ ?<:ʻ F;;=ʻ ;$;= Cʻ9GF:G;:ʻ 8=ʻ ?;ʻ $8=>%=;gʻ8>ʻ < ;gʻ <=:ʻ
8 =E< ʻ ?;ʻ 9<B;ʻ =<ʻ ?;ʻ ;B%9 < 8 ʻ 8>ʻ ;99;Mʻ G=% ;:ʻ ?;ʻ
E8ʻ=< %8=gʻ %=ʻ ?;ʻ F<=:gʻ8>ʻ:8 ;9 %$ʻ < %<=$;Ð <=:ʻ >8G ʻ % %9?ʼ
8 :gʻ 8>ʻ 8 ; 9; 9?% ;ʻ <Cʻ F;ʻ ?8=8G <F Cʻ :%9 %=BG%9?;:ʻ %=ʻ ?;ʻ
$8G ʻ 8>ʻ<ʻ <M8=ʻ 8=< $? ZT#

?;ʻ %=:;@;=:;=ʻ % 8=9ʻ <@@;<ʻ 8ʻ?<A;ʻ ;<@9;:ʻ%= 8ʻ ?;ʻ < ;ʻ
8>ʻ8 %B%=<ʻ F< F< %9 ʻ> 8 ʻE?;=$;ʻ ?;Cʻ?<:ʻF;;=ʻ% @; >;$ Cʻ ;0QQ1U #ʻ
$ <% ;:ʻ ;@< < ;:ʻ FCʻ ?;%ʻ;=; %;gʻ> 8 ʻ ?;ʻ ;9ʻ8>ʻ <=E=:ʻ
?;Cʻ 988=ʻ F;$< ;ʻ <=ʻ 8FI;$ʻ 8>ʻ 9$<=:<ʻ <=:ʻ <F?8 ;=$;ʻ 8ʻ ?;ʻ
< ?8 %$ʻ E8 : TTʻ ? %9 %<=% Cʻ E<gʻ9 % ʻ @ 8>;99;:ʻ%=ʻ ?;ʻ 8 %Ðʻ
<%=gʻ8>ʻ < ;9Ð FG ʻ ?;ʻ G:;ʻ 9$?%9 < %$9ʻ %=ʻ ?;ʻ T ʻ8>ʻ ?;ʻ
$; %$<ʻ 8=9G ;ʻ <=:ʻ %=ʻ ?;ʻ :<Cʻ 8>ʻ ?;ʻ $; ;F < %8=ʻ 8>ʻ
8F9 %=< ; Cʻ ;9%9 ;:ʻ ?;ʻ% @; %8Ggʻ <=:< ;gʻ8>ʻ ?;ʻ 8 <=ʻ@8=N
%>>9ʻ ?;ʻ G9;ʻ8>ʻ ?;ʻ < %=ʻ <=BG<B;ʻ E<gʻ%=9;=9%F Cʻ <F8 %9?;:ʻ
<=:ʻ ?;ʻ % 8=gʻ E; ;ʻ :;@ %A;:ʻ8>ʻ ?;ʻ< gʻ<=:ʻ ;< =%=Bʻ E?%$?ʻ
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stitution continually poured into the field the rising generations of freemen and soldiers; and their numbers were reinforced by the warlike and populous states of Italy, who, after a brave resistance, had yielded to the valour, and embraced the alliance, of the Romans. The sage historian, who excited the virtue of the younger Scipio and beheld the ruin of Carthage,[4] has accurately described their military system; their levies, arms, exercises, subordination, marches, encampments; and the invincible legion, superior in active strength to the Macedonian phalanx of Philip and Alexander. From these institutions of peace and war, Polybius has deduced the spirit and success of a people incapable of fear and impatient of repose. The ambitious design of conquest, which might have been defeated by the seasonable conspiracy of mankind, was attempted and achieved; and the perpetual violation of justice was maintained by the political virtues of prudence and courage. The arms of the republic, sometimes vanquished in battle, always victorious in war, advanced with rapid steps to the Euphrates, the Danube, the Rhine, and the Ocean; and the images of gold, or silver, or brass, that might serve to represent the nations and their kings, were successively broken by the *iron* monarchy of Rome.[5]

The rise of a city, which swelled into an empire, may deserve, as a singular prodigy, the reflection of a philosophic mind. But the decline of Rome was the natural and inevitable effect of immoderate greatness. Prosperity ripened the principle of decay; the causes of destruction multiplied with the extent of conquest; and, as soon as time or accident had removed the artificial supports, the stupendous fabric yielded to the pressure of its own weight. The story of its ruin is simple and obvious; and, instead of inquiring why the Roman empire was destroyed, we should rather be surprised that it had subsisted so long. The victorious legions, who, in distant wars, acquired the vices of strangers and mercenaries, first oppressed the freedom of the

[4] While Carthage was in flames, Scipio repeated two lines of the Iliad, which express the destruction of Troy, acknowledging to Polybius, his friend and preceptor (Polyb. in Excerpt. de Virtut. et Vit. tom. ii. p. 1455-1465 [xxxix. 3]), that, while he recollected the vicissitudes of human affairs, he inwardly applied them to the future calamities of Rome (Appian. in Libycis, p. 136, edit. Toll. [Punica, c. 82]).

[5] See Daniel, ii. 31-40. "And the fourth kingdom shall be strong as *iron*; forasmuch as iron breaketh in pieces, and subdueth all things." The remainder of the prophecy (the mixture of iron and *clay*) was accomplished, according ot St. Jerom, in his own time. Sicut enim in principio nihil Romano Imperio fortius et durius, ita in fine rerum nihil imbecillius: quum et in bellis civilibus et adversus diversas nationes aliarum gentium barbararum auxilio indigemus (Opera, tom. v. p. 572).

republic, and afterwards violated the majesty of the purple. The emperors, anxious for their personal safety and the public peace, were reduced to the base expedient of corrupting the discipline which rendered them alike formidable to their sovereign and to the enemy; the vigour of the military government was relaxed, and finally dissolved, by the partial institutions of Constantine; and the Roman world was overwhelmed by a deluge of Barbarians.

The decay of Rome has been frequently ascribed to the translation of the seat of empire; but this history has already shewn that the powers of government were *divided* rather than *removed*. The throne of Constantinople was erected in the East; while the West was still possessed by a series of emperors who held their residence in Italy and claimed their equal inheritance of the legions and provinces. This dangerous novelty impaired the strength, and fomented the vices, of a double reign; the instruments of an oppressive and arbitrary system were multiplied; and a vain emulation of luxury, not of merit, was introduced and supported between the degenerate successors of Theodosius. Extreme distress, which unites the virtue of a free people, embitters the factions of a declining monarchy. The hostile favourites of Arcadius and Honorius betrayed the republic to its common enemies; and the Byzantine court beheld with indifference, perhaps with pleasure, the disgrace of Rome, the misfortunes of Italy, and the loss of the West. Under the succeeding reigns, the alliance of the two empires was restored, but the aid of the Oriental Romans was tardy, doubtful, and ineffectual; and the national schism of the Greeks and Latins was enlarged by the perpetual difference of language, of manners, of interest, and even of religion. Yet the salutary event approved in some measure the judgment of Constantine. During a long period of decay, his impregnable city repelled the victorious armies of Barbarians, protected the wealth of the East, and commanded, both in peace and war, the important straits which connect the Euxine and Mediterranean seas. The foundation of Constantinople more essentially contributed to the preservation of the East than to the ruin of the West.

As the happiness of a *future* life is the great object of religion, we may hear, without surprise or scandal, that the introduction, or at least the abuse, of Christianity had some influence on the decline and fall of the Roman empire. The clergy successfully preached the doctrines of patience and pusillanimity; the active virtues of society were discouraged; and the spirit of

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;;' ?;' ;< =;:' <=:' < %8=<' E8 H' 8>' ?;' ;9%:;=' 68B ;' ;' %B%=;' :;9' 8%M' ;' 9' ;' ;:9' $%;=$;9' ;' <$;9' > 8 ' ><$ 9' ' $8=I;$ G ;9' R '%' @')!Q&&!O;:% ' < 8S' ?;'>% 9 '<=:' 89' :% %$G '9 ;@9' 8>'?G <='%=A;= %8=

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; <IE ;ʂ %< 8ʂ ?# ʾ 8 %#=< ʾ GG F<%%9 # ?;ʂ % @ 8A; ;@ 9ʂ 8>ʂ 8$%; Cʂ @<<Cʂ F;ʂ A%;E;:ʾ G=:; ʾ<ʾ ? ;;>8 :ʾ <9@;$ ʾ 3ʾ ?;ʂ @8; ʾ 8 ʾ @?% 898@?; ʾ % G9 < ;9ʂ ?%9ʂ <B;ʂ <=:ʾ $8G= Cʂ FCʂ ?;ʂ ;>>8 9ʂ 8>ʂ <ʾ ʾ %=:ʾ D FG ʾ ?;9;ʂ 9G@; %8 ʾ @8E; 9ʂ 8>ʂ ;<98=ʂ 8 ʾ ><=$Cʂ <;ʂ < ;ʂ <=:ʾ 9@8= <=;8G9ʂ @ 8:G$ %8=9 ʾ <=:ʾ ?;ʂ B;=%G9ʂ 8>ʂ 8 ; ʾ 8 ʾ %$; 8ʾ 8 ʾ ;E 8=ʾ E8G :ʾ ;M$% ;ʂ ;99ʂ <: % < %8=ʾ %>ʂ ?;Cʂ $8G :ʾ F;ʂ $;< ;:ʾ FCʂ ?;ʂ E% ʾ 8>ʂ <ʂ @ %=$;ʂ 8 ʾ ?;ʂ ;998=9ʂ 8>ʂ <ʂ @ ;$;@ 8 ʾ 2ʾ ?;ʂ F;=;? 9ʂ 8>ʂ <E ʾ <=:ʾ @8 %$C ʾ 8>ʂ <:;ʂ <=:ʾ <=G><$ G ;9ʂ 8>ʂ< 9ʂ <=:ʾ 9$%;=$;9ʾ <;ʂ 8 ;ʂ 98 %:ʾ <=:ʾ @; <=;= D <=:ʾ ʂ %=:%A%:G< 9ʂ <Cʂ F;ʂ JG< %>%;:ʾ FCʂ ;:G$< %8=ʾ <=:ʾ :%9$%@ %=;ʾ 8ʂ @ 8 8 ;ʾ %@ʂ ?;% ʾ ;9@;$ %A;ʂ 9 < %8=9ʾ ?;ʂ %= ;9ʾ 8>ʂ ?;ʂ $8 N G=% Cʾ G ʾ ?%9ʂ B;=;<ʾ 8 :;ʾ %9ʂ ?;ʂ ;>>;$ʾ 8>ʂ 9H% ʾ <=:ʾ <F8G D <=:ʾ ?;ʂ $8 @ ;Mʂ <$?%=;Cʂ <Cʂ F;ʂ :;$<C;:ʾ FCʂ % ;ʂ 8ʾ %=IG ;:ʂ FCʂ A%8 ;=$;ʾ ʾ 8 G=<;Cʂ >8 ʾ <=H%=:ʾ ?;ʂ 8 ;ʂ G9;>G ʾ 8 ʾ <ʾ ;<9 ʾ ;ʂ =;$;99<Cʂ < 9ʂ <=ʂ F;ʂ @; >8 ;:ʾ E% ?8G ʾ 9G@; %8 ʾ <;=9ʂ 8ʾ =< %8=<ʾ 9GF8 :%=< %8=ʂ D E% ?8G ʾ ?;ʂ @8E; 9ʂ 8>ʂ ʂ 8ʾ ?;ʂ G=%8=ʂ 8>ʂ ʅ <$?ʂ A% <B;ʂ ;<$?ʂ >< % Cʾ ;<$?ʂ %=:%N A%:G< ʾ G9ʾ <E<C9ʂ @899;99ʂ F8 ?ʂ <F% % Cʂ <=:ʾ %=$ %=< %8=ʂ 8ʂ @; N @; G< ;ʂ ?;ʂ G9;ʂ 8>ʂ >% ;ʂ <=:ʾ 8>ʂ ;<9ʂ D ?;ʂ @ 8@<B< %8=ʂ <=:ʾ 9; A%$;ʂ 8>ʂ :8 ;9 %$ʂ <=% <9ʂ D ?;ʂ ;?8:9ʂ 8>ʂ ?G= %=Bʂ <=:ʾ >%9?N %=Bʂ D ?;ʂ G:% ;=9ʂ 8>ʂ =<A%B< %8=ʂ D ?;ʂ % @; >;$ʾ $G %A< %8=ʂ 8>ʂ $8 ʾ 8ʾ 8 ?;ʾ =G % %A;ʂ B <%=ʂ D <=:ʾ ?;ʂ 9% @ ;ʂ @ <$ %$;ʂ 8>ʂ ?;ʂ ;$?<=%$ʂ <:;9ʾ %A< ;ʂ B;=%G9ʂ <=:ʾ @GF %$ʂ %=:G9 Cʂ <Cʂ F;ʂ ;M % @< ;:D FG ʾ ?;9;ʂ ?< :Cʂ @<= 9ʂ 9G A%A;ʂ ?;ʂ ; @;9 ʾ <=:ʾ 9 %H;ʂ <=ʂ ;A; <9 %=Bʂ 88ʾ %= 8ʂ ?;ʂ 89ʾ G=><A8G <F ;ʂ 98% ʾ ?;ʂ 9@ ;=:%:ʾ :<C9ʂ 8>ʂ GBG9 G9ʂ <=:ʾ <I<=ʂ E; ;ʂ ;$ %@9;:ʾ FCʂ < $ 8G:ʂ 8>ʂ %B=8 <=$;D <=:ʾ ?;D < F< %<=9ʂ 9GFA; ;:ʾ ?;ʂ <E9ʂ <=:ʾ @< <$;9ʂ 8>ʂ 8 ;ʂ G ʾ ?;ʂ 9$C ?;ʾ ?;ʾ %=A;= %8=ʂ 8ʾ ; F ;ʾ 8>ʂ < G = ZTʂ 9 % ʾ $8= %=G;:ʾ <==G< Cʂ 8ʂ 8Eʂ ?;ʂ ?< A;9 9ʂ 8>ʂ < Cʂ D <=:ʾ ?;ʂ ?G <=ʂ >;<9 9ʂ 8 ʾ ?;ʂ <;9 CB8=9ʂ ?<A;ʂ =;A;ʾ F;;=ʂ ;=;E;:ʾ 8=ʂ ?;ʂ $8<9ʾ 8>ʂ < @<=%< %=$;ʂ ?;ʂ >% 9ʾ :%9$8A;Cʂ 8>ʂ ?;ʂ < 9ʾ E< ʾ $8 ; $;ʾ <=:ʾ ;N %B%8G9ʂ L;<ʾ ?<A;ʂ :%>>G9;:ʾ < 8=Bʂ ?;ʾ 9<A<B;9ʂ 8>ʂ ?;ʂ :ʾ <=:

32 (ʾ %-ʾ 1%&(*+ʾ 0#$%!%&ʾ -(& +2%ʾ (0 (ʾ 3 *$ʾ + (*#+-ʾ "" !%ʾ 9%%+ʾ *2+#& +(ʾ #"ʾ (0% 6-%#"ʾ '*&%ʾ !%+ʾ (0% *+2%+*#6-ʾ + (*!%-ʾ #'ʾ (0%*(%ʾ $0# &% ,%-(*(6(%#"ʾ 3%("-ʾ 0 !% +#(ʾ *+!%+(%,ʾ ((+:ʾ% &(0%+ʾ %--%"-ʾ 1 4 9"%#"ʾ -6-(*+*+2ʾ (0% 1(*#+ʾ #"ʾ '*&%ʾ +,ʾ #"1#3 3 6+*1 (*+2ʾ (0% 0% (ʾ (#ʾ (0% "*F6*,-ʾ $0*10ʾ (0%:ʾ 1#+(*+

;ʾ G < $?1ʾ +G<;9 ʾ 8 ʾ %=ʾ 8 ʾ %%ʾ @ʾ 2!ʾ ʾ <$ 8F ʾ < G < ʾ 3ʾ %ʾ $ʾ "ʾ @ʾ 3ʾ 2ʾ ;:% ʾ 8=:8=ʾ ?;ʾ < %A< 8>ʾ < G Gʾ 8 ʾ ?%9ʾ ; %B%8G9ʾ E 8 9?%@S ʾ =ʾ <ʾ 9?%@ʾ <Cʾ %=:%$< ;ʾ ?< ʾ ?;ʾ 9<A<B;ʾ $8<9 ʾ 8>ʾ 1< %G ʾ E<9ʾ >% 9 ʾ :%9$8A; ;:ʾ <=:ʾ $%A% L;:ʾ FCʾ ?;ʾ ?8;=%$%<=9

1 0I =ʾ ?;ʾ =%= ?ʾ <=:ʾ ;= ?ʾ ?88H9ʾ 8>ʾ ? ʾ :C99;Cʾ 8 ;ʾ ?<9ʾ ; F; %9?;:ʾ ?;ʾ < ;9ʾ 8>ʾ >;< >G ʾ <=:ʾ $;:G 8G9ʾ 9<% 8 9ʾ E ?8ʾ <=9>8 ;:ʾ ?;ʾ $<==%F< 9ʾ 8>ʾ < Cʾ <=:ʾ %$% Cʾ %= 8ʾ 8=9 8G9ʾ B%<= 9

;E 8 : ? ;9; %=;9 % <F ; ?;C ?<A; F;;= 9G$N $;99%A;C @ 8@<B< ;: ?;C $<= =;A; F; 89 ; <C ?; ; %E; <$JG%;9$; %= ?:; @ ;<9%=B $ =% 9%<= ?9 ; ;A; C<B; 8> ?; E8 : ?<9 %=$;<9;: < =: 9 % = $;<9T ? ; ;< E;< ? ; ?<@@%=;99 ?; H=8E ;:B; < =:@; ?<@9 ?; A% G; 8> ?; ?G <= <$; 3

3- ?; ; % ' 8>':%9$8A; C'?<9' 88' 8> ;='F;;=' 9 <%=;:'E% ?'<A< %$;'; G; C'<=:'', ><=< %$%9 ' =:' <=:' ?;' %= ; $8G 9;' 8>' =< %8=9'?<9' @ 8:G$;:' ?;' $8= G=%$< 8<' 8>' :%9;<9;' <=:'@ ;IG:%$;' ' %=BG < ';M$;@ %8='%9' :G;' 8' ?;'A% G;'8> ' E=' % ;9' <=:' 8G= C' ?;'>%A;' B ;< ' A8C<B;9' 9G$$;99%A; C' G=:; <H;='FC' ?;'; # <=:' 8>'?%9'@ ;9;= ' <I;9 C'E; ;'%=9@% ;:' FC' ?;'@G ;'<=:'B;=; 8G9' 8A;'8>'9$%;=;;'<<#' 8>' <=H%=:' ?;'9< ;'@ %=$;'<:<@ %=B'?%9' F;=;><$ %8=9' 8' ?;' :% >; ;='9 <B;9' 8>'98$%; C'?<9' >8G=:;:'<'9$?88 ' 8>'@<%= %=B' %=' ?%9' $<@% < ' 9@%:' ?<9' %= 8:G$;:' %= 8' ?;' %9 <=:9' 8>' ?;' 8G ?' ;<' ?;' A;B; <F ;9' <=:' <=% < 9' 8 ' =b;>%M ' 8' ?G <=' %;

V E L" $! % ! F

% ;' G=9' 9 % ' ? ;< ;=; :' ?;% ' ;A8 ; :'9GFI;$ 9 'FG ' ? #' ?<9 I '
< <$H' E<9' ;@; ; :' FC' ?;'9%=B ;'>8 $;9' 8>' < < CG ' <=:' ?;' =; E9'
8>' ?%9' A%$ 8 C' ;<$?; :' ?;' :%9 <=' $< @' 8>0' ?%9' %E8 ?; ' 1=' ?;' '
9< ;' <G9@%$%8G9' 8 ;= ' ?< ' ?;' (A8G % ;' $8=$GF%=;' 8>' ?;8> ;G8A I'
: ; % ' E<9' : ; %A; ; :' 8>' <' 98=' <=:' ?;% ' =' ?;' ;%B? ?' C ;< ' 8>'
?%9' <B; ' ?;8:8 %$' E<9' ; G$ <= C' C%; : ; :' FC' ?%9' >< ?; ' 8' F?; _ # B%B#'
@GF %$' %= ; ;9 ' <9' ?;' @ ; :B;' 8>' <=' < %<=$;' E?%$?' ;8 ' ; 8@; ; /./@1/1'
8>' ?;' <9 ' ?<:' $8=9;= ; :' 8' @G $?<9;' FC' <=' <==G<' 9GF9%:C' 8>'
? ;';?G=: ; :'@8G=:9' 8>'B8 : ' ?;' 8C< ' ?89 <B;' E<9' ; :G$< ; :'
< ' 8=9 <= %=8@ ;' E% ?' $< ;' <=:' ;=:; =;99 ' %9' F8:C' E<9'
>8 ; :' 8' < ' ?;' ;M; $%9;9' 8>' E< ' ?%9' %=:' E<9' ;M@<=:; :' /C' ;'
?<F% 9' 8>' %F; < ' $8=A; 9< %8=0' ?;' > ;JG;= ; :' ?;' 9$?88 9' :%;'
89 ' 9H% >G ' <9 ; 90' FG ' ?;' :%9:<%=; :' 8 ' =;B ;$; :' ?;' 8>'
6 ;;$; ' <=:' 98' %B=8 <= ' :%:' ?;' < E<C9' ; <%=' 8>' ?;' >% 9 ' : ;N
;= 9' 8>'9$%;=$;' ?< ' <' G:;' < H' E<9' $8= %A; :' 8' ;@ ;9;= ' ?;'
9%B=< G ;' 8>' ?;' % % ; < ;' H%=B' 8>' < C 1' 9' 988=' <9' ?;' ?<:'
< <%=; :' ?;' <B;' 8>' ;%B? ;;= ' ?;' E<9' ;9 8 ;:' 8' ?;' E%9?;9' 8>'
?;' 9 8B8 ?9' E?8 ' ?;' ; @; 8 ' <9@% ;:' 8' B<%=' FC' %F; < % C'
< %:' $8=>%:;=$; ' < < % ' ?<:' >< ;=' %=' F< ;0' ?;' C8G=B$ @/0I'
8>' ?;' F 8 ?; 9' %:% % ' ?<:' ;:' <E<C' %= 8' < C' <=:' 6<G ' <=
< C' 8>' < F< %<=9 '<=:' ?;' E?8 ;=< %8=' <$H=8E ;#;:' >8 ' ?;>'
H%=B' ?;' >< ?; ' 8>' ?;8:8 %$' %9' >; 8$%8G9' 9GFI;$ 9' <: % ;:'
?;'9 ;=B ?' <=:' 9 < G ;' 8>' ?;% ' C8G=B' @ %=$;0' 1 <=:' ?;' 988='
$8=A%=$;:' ?; ' ?< ' ?;' ?<:' =8 ' :;B;=; < ;:' > 8 ' ?;' A< 8G '8>'
?%9' <=$;9 8 9' ' ?;' ?;<:'8>'9%M ?8G9<=:'A8 G= ;; 9' ?;9;; ; %C 11T011'
;> ' ?;' $< @' %=' JG;9 ' 8>'<:A;= G ;9 ' :;9$;=:;:' ?;' <=GF;' 89'
>8 ' <9' %=B%:G=G ' 8 ' ;B <:;' <=:' 988=' ; G =;:' 8' ?%9' >8 ?; '
E% ?' ?;' 9@8% 9' 8>' <' < %<=' H%=B' E?8 ' ?;' ?<:' A<=JG%9?;:'
<=:' 9 <%=' G$?' %G @?9' ?8E;A; ' E; ;' @ 8:G$ %A;' C' 8>'
>< ;' <=:' ' ?;' %=A%=$%F ;' 9 8B8 ?9' E; ;' ;:G$;:' 8' ;M ; ;'
:%9 ;99' FC' ?;' E<= ' 8>'$ 8 ?%=B' <=:' >88:' ?;C' G=< 8G9 C'
;98 A;:' 8' :;9; ' ?;% ' <==8=%<=' ;=$< @ ;= 9' <=:' F8 : C' 8

'D 0%' '#6&' '*&-('"%((%&-' #'' 0*-' + 3%^ R' $%&%' *+-1&*9%,' #+' '2#",' 4" (%' , '
$0%+' *('$ -' '*>%,'#+'(0%' 4 4%& '(0%' 8*+2',&%$' 0*-' 4%+' (0&#620'(0%*+(%&! *-'(#+: '
"%-* + ' ,' 1 "1%3' 3 3 ' &1%""*+' 4' @DDR' 0*-' 6(0%+(*1' *01(' $ 0' (0$'
(%-(*3#+:' #'' &#1#4*6-' #&' ("% -(' #'' (0%' 1#+(%3 4#& &:' C#(0-' ^C#(0%*(' '0' '4
< R' ' &#6($%*20-' (0%! 26%' 4& *-%-' #'' ++#,*6-' ^ *&3#+,' 4 5 ' (#&+' *' 4' '
+,' 0%#40 +%-' ^ 0&#+#2& 40' 4' DR' _ 0%' - 3%'-(#&:' *-' (%),' #'' (0%' (+4%&#' I
6-(*+' *+' (0% %1&%(' *-(#&:' #'' &#1#4*6-' & ' #,28* ' (0*+8-' *(' $ -' $ #5$&%,'
'&# 3' 6-(*+' (# 0%#,#&*1' (' 3 50(' 9%' "%2*(*3 (%' (#' 3 8%'(0%' &%$&-%' -644#5 3 3 '
-%%*+2' (0 (&#1#4*6-' $ -' *"" ,*(5#-5' (#' 6-(*4' (0%' +#+' *"' *3 4 &(*3' (#$ &,-'
0%#,#&*1# b'

!' ((6& ' %-(' F6 -' &%-*2+%(' 4&#1%&*((%' '%%' 4&1,*>$ (%b' &%2+ +(%3'
4' -' '`' J' 4' D . '%, ' #2%"bR' 0%' 9*-0#4' #'' N ^'
$0# $*-0%,' (# 9%' '(%**#4R' (0%*+' 4&#1%%,-' (#' 1%",)' (%(0%' 1#3 4"$#+' 7 Q,d
E1' #'' 0*-' -#!%&%*2+' V

98G=:;:'<' ;A8 '%=' ?;' ;< 9'8>' `;=8'?;'>;:' %?' @ ;$%@% < %8=/ /D' .@/'
%=8' ?;' 8G= <%=9'8>' 9<G %<'<=:'?; 'F 8 ?;' <9% %9$G9'< ;<:C' 5',
%=(8G9'FC' ?%9' >=$<=' ;M@;:% %8= T' E<9'G %<=%=M8G9 C'@ 8$ <% ;:'
FC' ?;' 9; A% ;' 9;=< ;' G' ?;' ;%B='8>' ?;' G9G @;' <9' 9?8 '
<=:' G FG ;= ' <9% %9$G9' @ ;9G ;:' 8' <99<99%=< ;' ?;' 8A; '8>'
?%9 9%9 ; D' ?;' :< ;:' 8'8>>;=:' ?;' 8A; '8>' ?% 'A#H%>;' ?;' C<%=' <=:'
%=98 ;=' < <%G9' E?8'%=' ?;' %:9'8>' 9%< %$' GMG C'<>>;$;:'
?;' : ;99' ?;' :; ;<=8G ' <=:' ?;' 9G =< ;' 8>' $?% ;9 T' C' '
?;' $8=9@% <$C' 8>' ?;' <$8= ;=9' `;=8' E<9' ;$< ;:'>8 ';M% ;D'
?;'< %;9' ?;' $<@% < '' ?;' @; 98=' 8>' <9% %9$G9' E; ;' F; <C;:D'
<=:' ?%9' E?8 ;'>< % C' E<9' $8=:; =;:' 8' ?;' 8=B' B8=C' 8>'$8 :'
<=:'?G=B; 'FC' ?;'%=?G <=' $8=JG; 8 'E?8' E<= #'$8G <B;' 8'
;=$8G= ; '8 ' 8' >8 B%A;' ?%9' ;=; %;9' ?;' ?<G# C' #% % ' 8>'
; %=<' E<9' 9 % '%=$<@<F ;'8>'9GF= %99%8=' ? ' ;@89; ' ?;'@ 8A8H;:'
?;' ;= % C' 8>'<' ><A8G % ;' B;=; < ' ; F <$;:' ?%9' $<G9;'<9' 988='<9'
?;' E<9' :%9B <$;:'$;< ;:' <' =;E' ; @; 8 '%=' C %<' <=:' BC@ '
<%9;:' <=' < C' 8>' 9;A;= C' ?8G9<=:' ;=' ;' @; 9%9 ;:' 8' ?;'#8 %G0%'
<9' 8 ;='8>'?; ' %>;'%=' <' >G% ;99' ;F; %8=' E?%$?' <$$8 :%=B'.# K'
8' ?;' ><9?%8=' 8>' ?;' <B; ' ?<:' F; ;=' @ ;:%$;:' FC' ? %9 %<=' ?; N
%9' <=:' <B<=' <B%$%<=9' ?%;' ?;' <9' E<9' <> %$;:' FC' ?;'
@<99%8=9'8>' ; %=<' ?; ' :<GB? ; ' %<:=;' E<9' :%9 %=BG%9?;:' FC'
] ?;' >; < ;' A% G;9'8>' % :=;99' <=:' >%:; % C' 9?;' >8 8E;:' ?; '
?G9F<=:'%=' ?%9' ;M% ;' <=:' <> ; ' ?%9' ;9 8 < %8=' 9?;' % @ 8 ;:' ?%9'
$; ;=$C' %=' ><A8G '8>' ?; ' 8 ?; ' =' ?;' :;$;<9;'8>' `;=8'8 8 <'
%<:=;' ?;' :<GB? ; ' ?;' 8 ?; '<=:' ?;' E%:8E' 8>'<=' ; @; 8 ' @ '
B<A;' ?; ' ?<=:' <=:' ?;' @; %<' % ;' 8' =<9 <%G9' <=' <B;:K#1'
:8 ;9 %$' 8>' ?;'@< <$; ' E?8'9G A%A;:' ?%9' ; ;A< %8=' <F8A;' E;= C0'
9;A;=' C;< 9' <=:' E?89;' $?< <$; '%9' < ;9 ;:' FC' ?;' <$$ < < %8='
8>' ?;'@;8@ ; ' 5' ;%B='<9' C8G' ?<A;' %A ;:'Z U
?< ;A; '>;< '8 '<>>;$ %8='$8G :'F;9 8E 'E< '@ 8>G9; C' <A%9?;:'9; % <% %'
FC' `;=8'8=' ?;' H%=B'8>' ?;' 9 8B8 ?9' ?;' <=H'8>'@< %$%<='
<=:'$8=9G ' ?;' $8 <=:' 8>' ?;' < < %=;' 88@9'<=' ;JG;9 %<='
9 < G;'<' ;<9G ;' %='B8 :' <=:' 9% A; ' 8>' <=C' ?8G9<=:' @8G=:9'
?;'=9G=;'8>'98=' <=:' ?;'@ 8 %9;'8>'<' %$?'<=:' ?8=8 <F ;' E%>;

Q 9#!%'4'<.)55
P 6*, -'(#3'*' 4' <<D' <<<'%,*(' =6-(%&' + #''(0%'M '1 6-%-'#''(0%'' ""#'
-*'*-16-'$ -'0*-' ' ('' 4#"*1:'#'' &%-(#&*+2' ("*%' 4&*3 1: '(' (0% 5(%3' 06&10' (#
(0%'-%%'#'' 40%-6-' ((0%'%>4%+-%'M&' #+-(+(*+#4"%' 0*-'$#+''#&'0*3'(0%4#$%&K
'6" #44#-*(*#+'#''(0% (&* &10' 1 1*6-' %%'Y 10 &*%-' ' !'< / b
Q 0%'1#+(%34#& &:' 0*-(#&*%-'#'' "196-' +,' +,*,(+' &%' &%(J 96(' -#3%'
%>(& 1(-' #&' '&-53%+"-' 0 !% 9%%+' - !%,' 9:' 0#(*6-'^0()*!***' >>*>' 4' GG GDR'
#+-(+(*+%' #&40:&#2%+*(6-'^ >1%&4('5 ' $ ' +,' +' ! &*#6-' &(*1"%-' #''
(0% %>*1#+' #'' 6*, -' 0%' 0&#+*1"%' " &#%"**3*-' ^ 3 2# *-(#&*-%R &%#'
#&*2*+ "-''#&'(0%&%*2+-'#''Y%+# +,' + -(-*6-'/ +,' ' 36-(18+#$"%,2%' "3#-('
'#&(0%'"**-(' (*3%'3!'#9"*2 ('#+-'(# (0%" &2%' (5' MQ6& (%116"(5#+-'#'' *"%3#+('
^ *-(',%-' 34'(#3'!*'4'.@D /DR' _ %0'' &5%&' 44. . '(b

#$%

V<# # ' ?;8% 8 %$' $8=:;9$;=:;:' 8'9; A;' ?;' 9G@@8 ;:' E% ?'
)WO'.=< $8 <B;' ..%:'>%:;%C' ?;' $<G9;' 8>'?%9'F;=;><$ 8 0 ?%9' <@%:' <$?'
:8= %FG ;:' 8' ?;' ;9 8 <%8=' 8>' ` ;=8 0 <=:' %=' ?;' 9;$8=:'
0 ?;' $ ' <9' ?;C' E; ;' $< ;:' @G 9G;:' <=:' BG;99;:' %;'
9%< %;' >;F;9' % ' ?;C' ;>' <=' ;<9C' A%$ 8 C' 8' ?;' %G@;%%<'
>0 A% % @9 ## G' ?@' ><% ?>G' 9; A<=' E<9' 9G:::=C' $8=A; ;:' %=8'
<' >8 8%:<F ;';=; C' E?8' 9@ ;<:' ?;' >< ;9' 8>' E< ' > 8 ' 8=0
<@ %=8@ ;' 8' ?;' : %< %$0 <=C'>8G %9?%=B' $% %;9' E; ;' ;:G$;:'
8' <9?;9' <=:' ?;' <B %$G G ;' 8>' ? <$;' E<9' < 89' ;M % @< ;:' FC'
?;' E<= 8=' $ G; C' 8>' ?;' 68 ?9' E?8' :;@ %A;:' ?;% ' $<@ %A;'
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[Aug., 489] tions of Odoacer, to resist the progress of his enemy. In many obscure though bloody battles, Theodoric fought and vanquished; till at length, surmounting every obstacle by skilful conduct and persevering courage, he descended from the Julian Alps, and displayed his invincible banners on the confines of Italy.[21]

The three defeats of Odoacer. A.D. 489, Aug. 28, Sept. 27 A.D. 490, August [(1) Battle of the Isonzo]

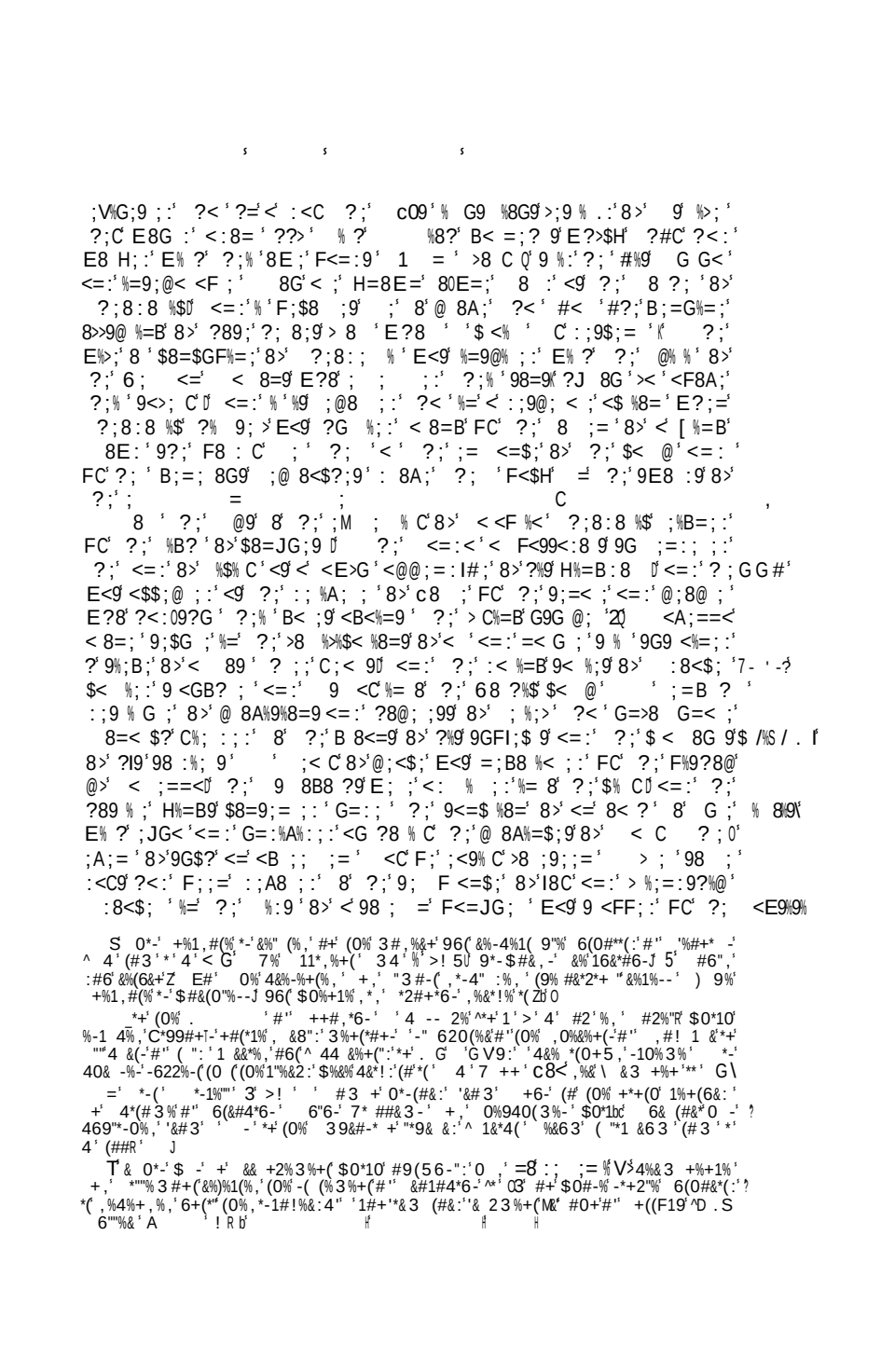
Odoacer, a rival not unworthy of his arms, had already occupied the advantageous and well-known post of the river Sontius near the ruins of Aquileia; at the head of a powerful host, whose independent *kings*[22] or leaders disdained the duties of subordination and the prudence of delays. No sooner had Theodoric granted a short repose and refreshment to his wearied cavalry, than he boldly attacked the fortifications of the enemy; the Ostrogoths shewed more ardour to acquire, than the mercenaries to defend, the lands of Italy; and the reward of the first victory was the possession of the Venetian province as far as the walls of Verona. In the neighbourhood of that city, on the steep [Athesis] banks of the rapid Adige, he was opposed by a new army, rein- [(2) Battle of Verona, Sept. 30] forced in its numbers and not impaired in its courage: the contest was more obstinate, but the event was still more decisive; Odoacer fled to Ravenna, Theodoric advanced to Milan, and the vanquished troops saluted their conqueror with loud acclamations of respect and fidelity. But their want either of constancy or of faith soon exposed him to the most imminent danger; his van- [489 A.D.] guard, with several Gothic counts, which had been rashly en- [Faventia] trusted to a deserter, was betrayed and destroyed near Faenza by his double treachery; Odoacer again appeared master of the [Ticinum] field, and the invader, strongly entrenched in his camp of Pavia, was reduced to solicit the aid of a kindred nation, the Visigoths of Gaul.[23] In the course of this history, the most voracious appetite for war will be abundantly satiated; nor can I much lament that our dark and imperfect materials do not afford a more ample narrative of the distress of Italy and of the fierce [(3) Battle of the Addua, August 11, 490] conflict which was finally decided by the abilities, experience, and valour of the Gothic king. Immediately before the battle of Verona, he visited the tent of his mother[24] and sister, and

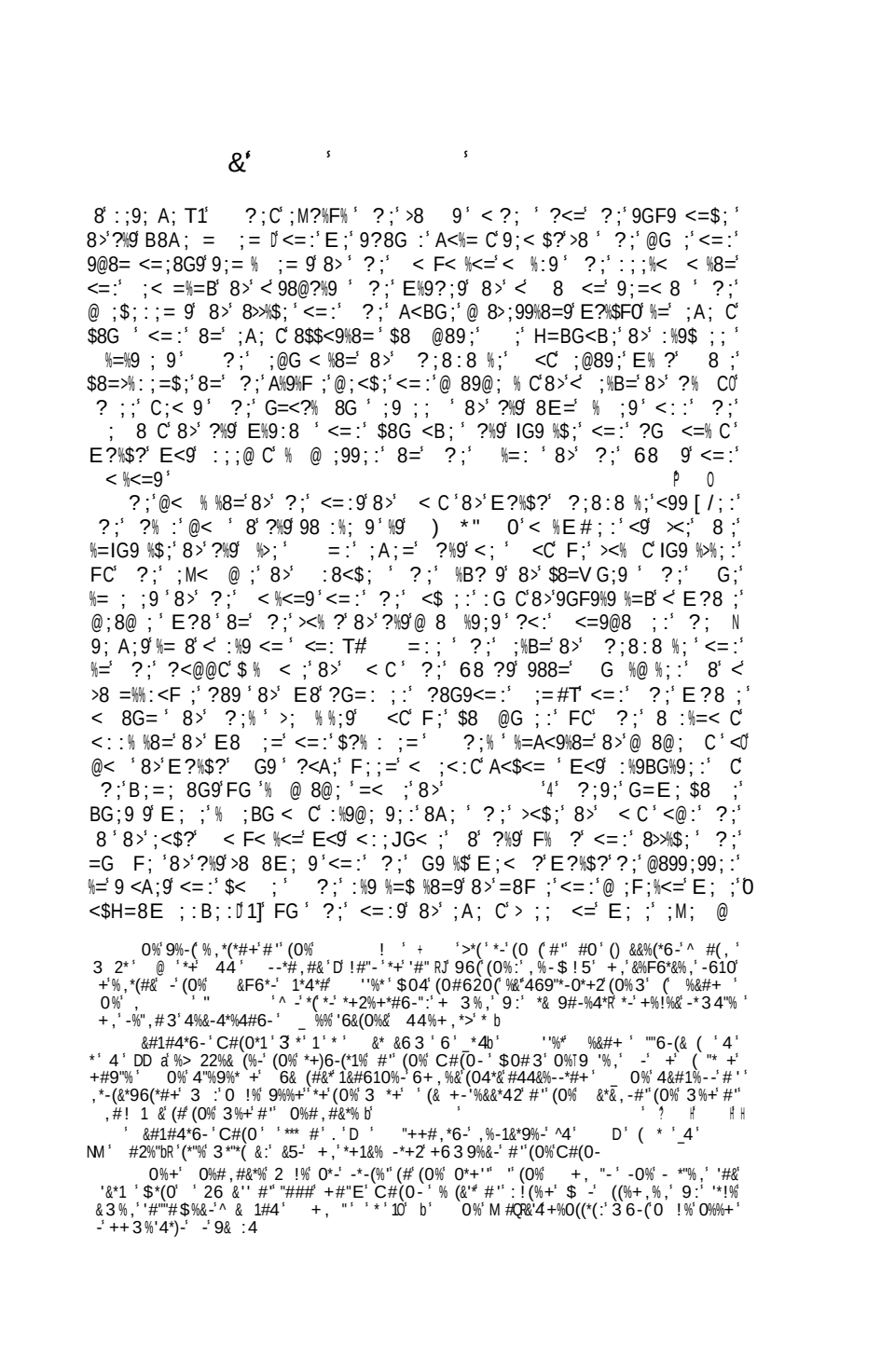
[21] Theodoric's march is supplied and illustrated by Ennodius (p. 1598-1602), when the bombast of the oration is translated into the language of common sense.

[22] Tot reges, &c. (Ennodius, p. 1602 [p. 207, ed. Vogel]). We must recollect how much the royal title was multiplied and degraded, and that the mercenaries of Italy were the fragments of many tribes and nations.

[23] [They were a counterpoise to the Burgundians who came to the aid of Odovacar and invaded Liguria. See Historia Miscella.]

[24] See Ennodius, p. 1603, 1604 [p. 208, ed. Vog.]. Since the orator, in the king's presence, could mention and praise his mother, we may conclude that the magnanimity of Theodoric was not hurt by the vulgar reproaches of concubine and bastard.



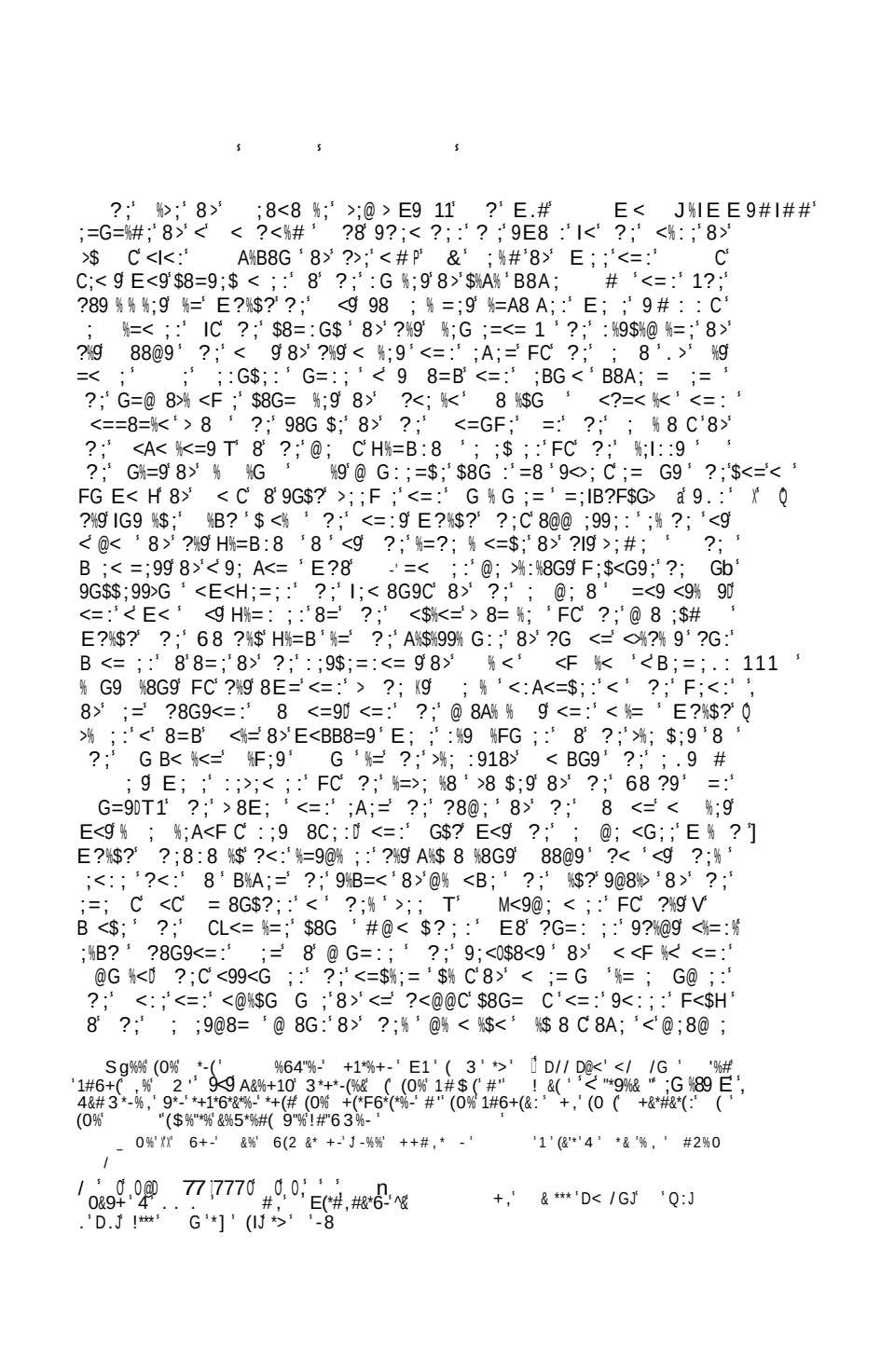


<M;9 F;;=I8C;:F;%=;9?=<F;I A%;B;8>F;%=B 9GFI;$ VE=C 8 F;<E9 8>?%9$8G= C 1K <9?%8=<=:;A;= $8=A;=%;=$;'988=@; 9G#;:?;$8=JG; 8 9 8 99G;?;8 ;; ;B<=:;99 8>?;=<%A;9 ?;C9 %@;%<% ;:%=?;G9; 8>?;%8 ?; 0 8=BG;=<=:?;%$8= ; @>8?;< %= ;?F8 9E<9<@@<G:;:FC?;8:8 %$?% 9;>E?8 B<%%;:?;% @ ;IG:%$;98 ?%9 8E=FC:;$<%=B?<?;$?%:E?8?<:; F;:>;8$%8G9<==;9E?%$?E;;%=9;=%F C ;%=JG%9?;:FC?; %$?=<=:GMG %8G9<F<%<=1T FG ?;9 G G<$8=A;9%8=9 E;;=8;=$8G <B;:FC?;@8 %$C8>< 8=<$?@;@;G<;: ?;9;@<<%8=8>?;<%<=9<=:68?9;9;A%=B?;>8;>8?;<9 8>@;<$;=<=:?;< ;>8?;9;A%$;8>E< 8<$$8 @ %9? ?%9:;9%B=?;9 G:%;:8 @ 8;$?%9%=:G9 %8G9 9GFI;$9<=:8 8:;<;?A%8;=$;E% ?8G;=;A<%=B?; A<8G 8>?%9 98:%;9E?8E;;<%=<%=;:>8?;?;@GF %$:;>8=$;?;C?;:?;%<=:9<=:F;=;>%$;9JG<%%<C 9%@;=:D<>?;8G=:;8>?;G@;0?;C0E;;@;@<;:8 <$?0G=:;><;$8=:G$8>?;%@8A%=$%<8>>%$;9D<=:?; , E?8;;M;=8>< C E<9:%9 %FG;:%=8?;9;A;<JG<;9 8><E;0;BG<;:$< @ ?;9;A%$;8>?;@<<$;<=:8>?; >88=%;9E<9@;>8 ;:FC$?8%$;8FC 8<%8=D<=:;<$?;M <8:%=<C><%BG;E<9 ;$8 @;=9;:FC<=%=$;<9;8>@<C <=:8$$<9%8=<:8=<%A;9?;8:8%$?<:8=A%=$;:?%9F<A; $8 @<=%8=9?<;@% ;G9F;<$JG%;:<=:;>;=:;FC?; %# ;<9>;?%9;M<@;?;C9 8A;8;M$;%=?;G9; =8 8=C8>?; <=$;<=:9E8:?;%=9G ;=9 8>?;%$ 8 %;9FG 8>?; %99% ;E;<@8=9E?%$?;?;C E;I@;88 G$?; %=$%=;:8=;B ;$D<=:?;%A;C %<B;8>E<9:%9@<C;: %=?;:<%C;M;$%9;<=:<==G<;A%;E9 8>?;?;68?%$$<A<C >% ?8GB?B;= ;:%9$%@%=;% @89;:?;?<F%9 8>8:;9C 8F;:%;=$;<@:; @;<=$;D<=:?;68?9E;;%=9G$;:80 9@<;?;0@;8@;8 ;A;;=$;?;<E9 8G=:;9<=:?;

9;;(0% 18+#!#"%,23%+(#"C#(0*1"*9%&(: < # Y G1#34 &%**
<< E) \

&#1#4*6-C#(0('*1 0% #3 +9#:-"% &+%,(0%" +26 2%' &!**(
(R#"(9%M8R9- 0%*& 2%+%& "*2+#& +1% +#(,%-(&#:%,$' (9%%>%(#(*# S
3 "-630 'M'%3 "%$0# 3*20(-(6,:$*(0#6(-0 3%'#&#' (##, *+-' ,*#-%
'"% &+*+2'4&#!31%,'(0%'*+,*2+ (*#+' +,'1#+(%34(#"0*-'%% 3(&:3%+

SQ'-:*+2#" 0%#,#&*1'$-'#6+,%,'#+'%(F3&*$*%%(3 #+-'3*-$'(3"
((6& C#(06& J%(6(* -' -622%-(%,'"6 .' 0*10'*-',#4(%,'9:'C ,(
0 6-%+b C#(06-'*3*((#& #3 +6+#)4 %% (9%'4& 23% (' +I'] □(-' " %-+



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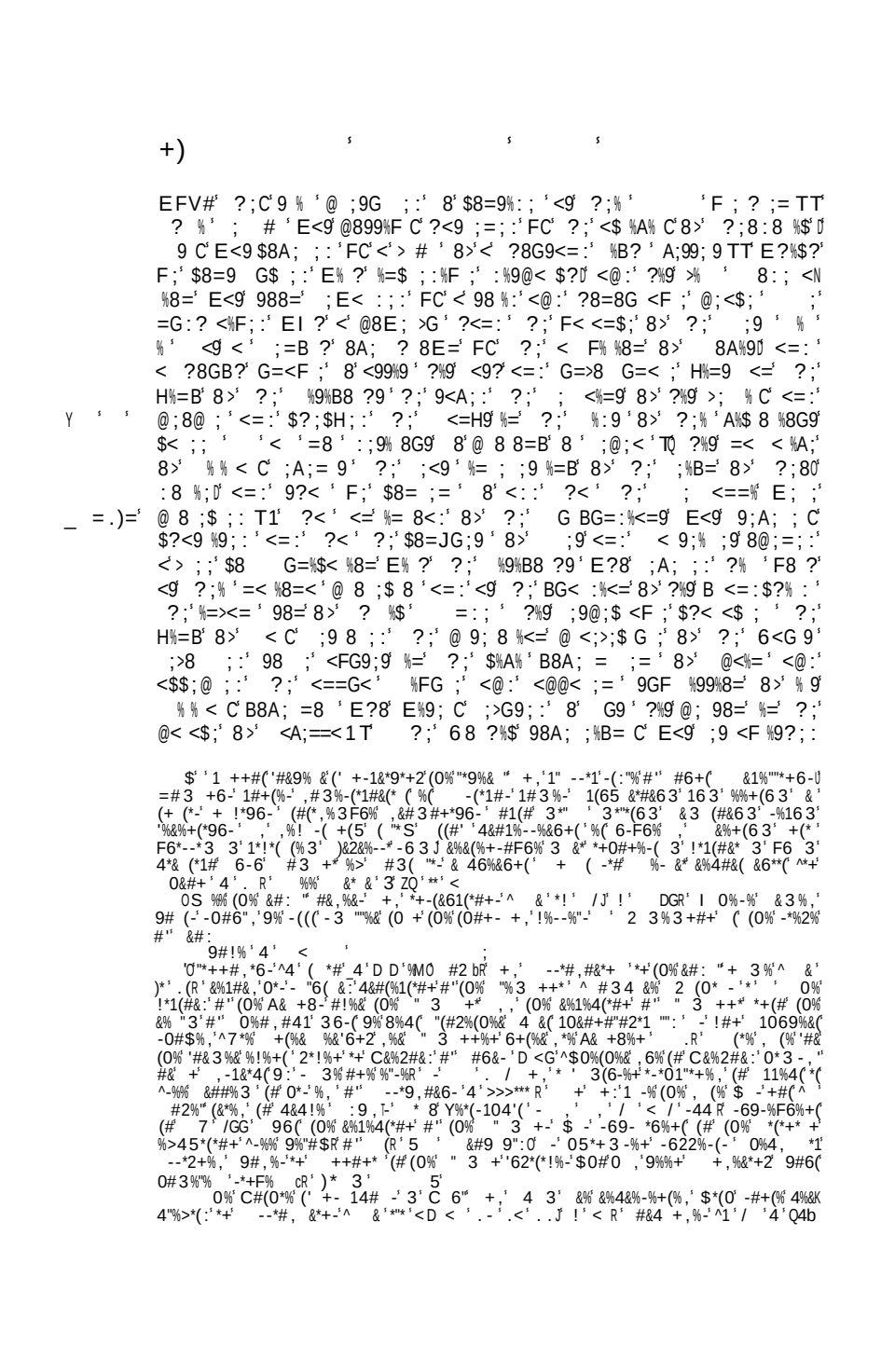

E;@;' ;9@;; ' <= %' <==k [G-G9Ď F;' ;; ; 8< ;:'%=' @8 @8G9' 9 C ;' #;' > E= %Ć 8>' ?;' E8' ;@ G%;9' <@@ <G:;:' ?%9' 8E=' B8A; =0' <9' ?;' >;$' 9% % % G:;' 8>'"' 98 ;' <=:' =:%A%:;:' ;@% ;' <=:';<% ;:'< 8A;' ?;' ??%B9' 8>' ?;' ;< ?' ?;' 9< ;' @ ;0; %=;=$;' E?%$?' ?;' 8:;9 C' < 8C;:' 8' ?;' @; 98=' 8 ' <=H' 8>' =<9 <9%G9' ?;' < %<=$;' 8>' ?;' ;' <=:' ;9 ' E<9' <==G< C' :;$ < ;:' FC' ?;' G=<=% 8G9' 8?8%$;' 8>' E8' $8=9G 9Ď FG ' % ' 9?8G :' 9;; ' ?< ' ?;' < %<=' $<=:%:<;' E?8' C<9' =< ;:' FC' ?;8:8 %$' <$$;@;:' <' ?G=%<' ;8=>% < %8=' > 8 ' ?;' 98A; ;%B=' 8>' 8=9 <= %=8@ ; K' ?;' VIH/ ?I$ @< <$;' 8>' <A;==<' ;> ;$;:' ?;' % <B;' 8>' ?;' $8G ' 8>' ?;8:89%G9' 8 ' < ;= %=%<=' ?;' @ <; 8 %<=' @ <;>;$ ' ?;' @ >;$ ' 8>' ;.=;' ?;' JG 9 8 ' ?;' <9 ; ' 8>' ?;' 8>%$;9' E% ?' ?;' @GF %$' <=:'@< 8@%< ' ;<9G ; 9' E?89;' >G=$ %8=9' < ;' @<%= ;:'%=' B<G:C' $8 8= 9' FC' ?<' :%; 8 %$' 8>' <99%8:8 %G9' 9 % ' $8= %=G;:' 8' <$ ' <9' ?<' %=%9 ; 9' 8>' 9 < ; ' =:' ?;' 9GF8 :%=< ;' $< ;' 8>' IG9 %$;' <=:' ?;' ;A;=G;' E<9' :; ;B< ;:' 8' 9;A;=' $8=9G < 9' ? ;;' $8 ;$ 8 9' <=:' >%A;' @ ;9%:;= 9' E?8' B8A; =;:' ?;' >% ;;=' 8>' < C' <$$8 :%=B' 8' ?;' @ %=$%@ ;9' <=:' ;A;=' ?;' >8%0 9' 8>' 8 <=' IG %9N @ G:;=$; 11' ?;' A%8 ;=$;' 8>' ?;' $8=JG; 8 9' E<9' <F< ;:' 8 ' ; G:;:' C' ?;' 9 8E' < %>%$;' 8>' IG:%$%< ' @ 8$;;:%=B9' Ď ?;' $%A% ' <: %=%9 <N %8=' E% ?' % 9' ? =8G 9' <=:' ; 8 G ;= 9' E<9' $8=>%=;:' 8' ?;' < %<=9' Ď <=:' ?;' @;8@ ;' 9 % ' @ ;9; A;:' ?;%' : ;99' <=:' <=BG<B;' ?;% ' <E9' <=:' $G9 8 9' ?;% ' @; 98=<' > ;;:8 ' <=:' E8Ø ><% :9' 8>' ?;% ' <=:;:' @ 8@; C' ' ?<:' F;;=' ?;' 8FI;$ ' 8>' GBG9 G9' F' $8=$;<' ?;' %= 8:G$ %8=' 8>' 8=< $?CĎ % ' E<9' ?;' @8 %$C' 8>' ?;8:8 %$' 8' :%9BG%9;' ?;' ;%B@' @>' <' < F< %<= 1# >' ?%9' 9GFI;$ 9

#$+'%S2:'++'0*-'2#","#&'-*"!%&' #*+-' +'-*"!%&' #*+-'#"' 0%#,#&*1'$1'*+,'#+'#9!%&-%' '0#' 3 5'#"(0'' 34%&#&J 4+'&%!%&-%' 0%#,#&*1Ţ-' 4)#&=5& 3' $*(0'1&#--' 0,'-(&' ' ' 6(0%&%'*-' '1(541&'1#*+' #"' 0%#, 0 ($80'0*-'96-(a ',' 0%' " ((1% #"' (0%'%34%&#& +,'(0%'8*+2'#"' (":' &%'&%4&%-%+(%,'9:' --* ' ,F+6-'^ &'*' &'J)*'*' '<J' !*'*R' +,' &#1#4*6-'^C#(0' '**'1' U3' ***'1' (R'$0#' 1%"%9& (%'("(%''&*%+,-0*4' #"' + -(-*6-' +,' 0%#,#&*1J 96((0%''*26& (*!%'-(:"%'#"' 1#3)* 3%+(' $ -' *+(%&4&%(%,'*+' '!%&:' ,*''%&%+(' -%+-%' (#+-(+(*+#4"%' +,' !%++

00 #' (0%'>!**' 4&#!*+1%-'#"' (0% #(*(' 26" &+%'&*,'(0% 4% #+'^7%' %9' A #B8 :' ' **' ' . ' 0 -' -69)#*+%,' +' >!***(0' (0% 4%++*0%' ^ 6&**(#&" 1&*e+' %&63' (1 &63' (#3*' &' !(+' 4' *.<< *+' #'5'(0%-%' &,*+*' ' +,' (5-*1 ' $%&%' 4#--%--%,' 9:'(0% +, "-' +,'(0% ($#' '*-5* -' -' $%"' -'(0% # * *("4-'-%%3',(,'0 !%'9%%+' 9 +,#+%,'(# ' 3*"*(&:'2#!%&+3%+(' 9%5" (%

, '*6-'^4 --*3'96('%-4%1* "":'(9%!(9' +,'!*(0'9##8-' $0*10'1#+(*+' (0%L !E ' #&' 4 5 *(-'4"4'"*4%-R' +,' (0%' *!*" *-(#&:' #'' * +4#+%' ^(#3*'*' ' **' *** R' H'9S' #6+(-' $)0',)' 0%' 4" 1%-'*+' %!%&:' ("* +'1*(:' &%' ++*0*" (%,'0#$%!%&'9:' (A%#'] %&#+ ' "(*-(& ('4'*' '!(+' 4'* :R'@'#&' (0#-%'#'' :& 16-%' +,' 4"%-' Q(' c(,'G<R,$N%'-4%1* "3,(%)# 4(((&:'%#& 3*--*#+-' ' 4' #&#3 %+' &%+%-

; ' ' ' '

$ % > $ ' % ?' $ < 8 > 1' <= :' ; A ; =' E %RF ? ; 8 : 0' =' ?; ' 9; A; = ?'
', . ' ?%' @ ; <$; >; ' ; %#?' >; ; 8 : E %d' A%9% ; :' ?; ' 8 ' $<@% < ' 8>'
?; ' E8 :' 0' ?; ' 9; =< ; ' <= :' @ ; 8@ ; ' <: A<=$; :' %=' 98 ; = ' @ 8$; 99%8='
8' 9< G ; ' <' 9; $8 = :' <I<=' <' =; E' < ; = %=%<=0' <= :' ?; ' =8F C'
9G@@8%0##:' ?< ' $?< <$; ' FC' ?; ' <99 <= :; ' 8>' < IG9 ' <= :' ; B9 :'
B8A ; = ; = K#% =' < :%9$8G 9; ' E?%$?' ?; ' E<9' =8 ' <> <%:' 8' @ 8N
=8G=$; ' %=' @GF %$' <= :' 8' %=9$ %F; ' 8=' <' <F ; ' 8>' F <99' 8 ; '
%=' ?%9' <GBG9 ' $; ; 8=C ' 9?8 ' <' <9 ' <C' 8>' : ; $ %=%=B' B 8 C0' <= :'
<' 9<%= ' ?; ' 9@; $ < 8 ' 8>' ?%9' @8 @8G9' 9$; = ; ' $8G :' 8= C' ?8@; ' %='
?%9' @%8G9' ><=$C ' ?< ' % ' E<9' ; M$; ; :' FC' ?; ' $; ; 9 %< ' 9@ ; = : 8G '
8>' ?; ' ; E' W; G9< ; K T G %=B' <' ; 9%: ; =$; ' 8>' 9%M' 8= ?9 ' ?; '
>< ; ' ?; ' @; 98= ' <= :' ?; ' $@ ; 8G9' : ; ; <=8G ' 8>' ?; ' 68 ?%$
H%=B ' ; M$% ; : ' ?; ' <: % < %8=' 8>' ?; ' 8 <=9 ' <= :' ?; ' $8= ; I : < ; : '
E% ?' ; JG< ' $G %89% C' <= :' 9G @ %9; ' ?; ' 8=G ; = 9' ?< ' ; <%=; :'
8>' ?; % ' <=$%; = ' B ; < = ; 99' ; ' % @ %= ; :' ?; ' >88 9 ; @9' 8>' <' $8=0'
JG; 8 ' 8=' ?; ' @% 8 %=; ' ?% ' <= :' > <=H C' $8=>; 99; :' ?< ' ; <$?'
: <C' ?; ' A%; E ; :' E%> %' > ; ?' E = : ; ' ?; ' >8 G ' 8>' <I<=' <= :' ?%9
8> C' $8 G == ' ?; ' ?; < ; ' 8>' 8 @; C' <@@; < ; : ' ; A ; =' %=' % 9
: ; M# ' <9' <' ?JB ; ' 8G=%<%=' < %>%$%< C' ?8 8E ; :' <= :' @8 %9?; : '
<= :' <: 8 =; : ' FC' ?G <=' %= : G9 C0' <= :' ?; ' A<BG; C' $8 @G ; : '
?< ' <' %A; ' 8>' B8 :' G9 ' ?<A; ' F ; ; =' : <%=; :' 8' ; ; $ ' ?; ' $8 899< '
< @?% ?; < ; ' 8>' % G9 K# 8 ' ?; ' 8G ?9' 8>' >8G ; ; =' <JG; : G$ 9 '
<' @G ; ' <= :' $8@%8G9' 9 ; < ' E<9' : %>>G9; :' %= 8' ; A; C' @< ' 8>' ?; ' 0
$% C' 0' < 8=B0' ?; 9; ' ?; ' W<G : %<=' E< ; ' E ?%$?' < R#' < ' ?; ' : %9N
<=$; ' 8>' ?% C0; %B ?' % ; 9' %=' ?; ' <F%=; ' 8G= <%=9 ' E<9' $8=A ; C ; :'
< 8=B' <' B ; = ; ' ?8GB?' $8=9 <= ' : ; $ %A% C' 8>' 98 %: ' < $?; 9 ' % ' % '
: ; 9$; = : ; : ' 8=' ?; ' 9GG==% ' 8>' ?; ' A ; ? %= ' ?% ' ?; ' 8=B' <= :'
9@<$%8G9' A<= 9' E?%$?' ?<: ' F ; ; =' $8=9 G$; : ' >8 ' ?; ' @G @89; ' 8>

6' %%' 0*-' &%2 &, ' +, ' + , *, 25%' '#&' (0%' -4%1(1"%-' #'' (0%' F*&#+-' (0%' +5RO* '
(0% (&%' + , ' (0%' (0% (&%' *+' (0%' ! &#+*1(%' + , ' 4*-("%-' #'' --*#, #& * -' ^ & ' *' DG '
D@' <G' < ' <DJ' ***' / J' *! ' / ' *""6-(& (%, ' 9: ' (0% >*! (0' ++#((*#+' #'' 0' -1#6T-'
-(#&:R ' $0# 0 -' 1#+(&!%, ' (# -4&*+8"% (0% -69)%1(i *(0 #-(%+((*#6-' (0#620' 2&%%0'
%' "% &+*+2 ' ''(' *-' 644#-%, ' (0 (0%MR, #&*1' ' !*-*((#' (+% 3 :' 0 !% 0%6+' (0%
,1%+-*#+' #'' (0%' 469"*1 (*#+' #'', *%' " ! ' * 'B $0*10' *+' (0 (1 -% $#6", '
4&#9 9":' 9% (0%' $#&8' #'' *9%&*6-')

K(+#+: 3 ' - %-' 4' @D ' `' 5 '! &*6-' %+(*1%+-*-'*+' 0&#+ ' +' (0%' -1 "%#"
469"*1' +, ' 4%&-#+ " 3%&*(' ("%' C#(0*1'1#+F+%&#& *-' (' "%Z5' -' 3 610' R ' (%+0'
(*+* +' -' 0%' 3 :' -%% 3 ' (# &) +

h' *(' A6"2%+(*#' *+' &#+' ++ "' =11"%-' ' <GG' #' #

@' --*#, #&*6-', %-1&*9%-*+' 0*-4# 3 446--(:"%(0%'#&6 3'#'' &) +' & ' * ***'
!** D' GR' (0% (0 5 (&%'#'' &1, "6-' M*!' 1*R ' +() (0% +*40*(0% (&%#'' -' ^!' . DRJ' +, '
0*-', %-1&*4(*#+-' &%' +#(6+$#&(0:'#''(0%&% , %&!-'4%&6- "' 11#&, *+2' (#' (0% &+5% 3' H
4&*1%-' (0% 99 ' &(0%"% 3 :' 1# 3 46(%-' (0 ((0%' 0&*18$#&*(+, ' 3 -#+&:' #'' (0%
#"*-%6 3' $#6", ' +#i ' 1#-(($%+(:' 3* ((3'#'' A&%+10' "*!)%-') %+ ', %' H 1 , 3*%
, %-' +-1&*4(*#+-' (#3 ' >!*+' 4' / < < R ' #$' - 3 "" ' 4 &(' (0 (-(64%+, #6-'
' 9&*1' Z

;

$8 8=' 9 ; E ; 9 ' 9GF9%9 ; : ' <> ; ' E ; A ; '$; = G %; 9 '%=' ?; % ' @ %9 %=; ' 9 ;=B ?D' <=:' ?;' 9GF ;% <=:; % ' #; =; 9' ?<A;' F:;=' @ ;>; ;:' 8' < ' ?;' A%9%F ;' 8=:; 9' 8>' >%8 =;WT' ?;' 68 I%$' H%=#9 ' 98' '%=IG %8G9 C' <$$G9;:' 8>' ?;' G%@' 8>' <= % #G% C' E; ;' <=M%8G9' 8 @ ;9; A;' ?;' 8=G ;= 9'8>' ?;'=< %8=' E?8 ' ?;C'?<:'9GF:G;: #1 ?;' 8C<' ;:%$ 9' E; ;'> < ;:' 8'@ ;A;= ' ?;'<FG9;9' ?;'%%;B ;$ '8 ' ?;' :;@ ;:< %8=9' 8>' ?;'0$% %L;=9' ?; 9; A;9D' <=:' @ 8>;99;:' < $?% ;$ ' ?;'<==G< ' G '8>' E8' ?==: ;:'@8G=:9'8>'B8 :' E;= CO' >%A;' ?8G9<=:' % ;9'<=:' ?;' ;$;%@ '8>' $G9 8 9' > 8 ' ?;' G$ %=; ' @8 ' E; ;' <99%B=;:' >8 ' ?;' 8 :%=< C' ;@<% 9' 8>' ?;' E< 9' <=:' @GF %$;:%>%$;9 ' 9% % < ' $< ;D' E<9' ;M ;=:;:' 8' ?;' 9 < G;9' 8>' ; <' 8 ' < F ;' 8>' ;=' 8 ' <=% < 9 ' ?;' 9@% %' 8>' ?;' ?8 9#' E?%$?' ?<A;' B%A;='<' 8:; ' =< ;' 8' ?;' +G% %=< ' E<9' <@@ <G:;:' FC' ?;' < F< %<=9D' ?;' F <L;=' ; ;@?<= 9' 8>' ?;' K ' ' ; ;' :% %B;= C' ;9 8 ;:D' ?;' >< 8G9' ?;%>; '8>' C 8=' :;$;%A;:' ?;' $< ;' <9' ?;C' E; ;' : %A;=' ? 8GB?' ?;' >8 G '8>' ;<$;D' <=:' D <=' 8>>%$; ' <9' $;< ;:' 8' @ 8 ;$ ' ?89;' E8 H9' 8>'< ' E?%$?' ?;807 :8 %$' $8=9%:; ;:' <9' ?;' =8F ;9 '8 =< ;=' 8>'?%9' H%=B:8 0 > ; ' ?;' ;M< @ ;' 8>' ?;' <9 ' ; @; 8 9' ?;8:8 %$' 1 $>;A ;:#I%##' ?;' ;9%:;=$;'8>' <A;==<' E?; ;' ?;' $G %A< ;:' <=' 8 $?< :' E% ?' ?%9' 8E=' ?<=:9 T1' 9' 8> ;=' <9' ?;' @;<$;' 8>' ?%9' H%=B:8 ' E<9' ? ;< ;=;:' R>8 ' % ' E<9' =;A;' %=A<:#$' FC' ?;' %< F< %<=9' ?;' ; 8A;:' ?%9' $8G ' 8' ; 8=<T1' 8=' ?;' =8 ?; =' > 8= %; ' <=:' ?;

h' A#&' (0% 26% ,61(-' +,' "# 1-%' -%% (& 9#' ^ ' !' 4 ' < GR' 0+:') *-(' (' '
>>>!*' J5R' --*#,#&*6-' ^ &' **R' <G' < J' !*' R' &#1#4*6-' ^C#(0' "' T*' 1 ' R' +,'
&,*+#' ^ #*4 ' +(*1 ' 4 ' / .5/DDR' #$' -610' $#&8-' 1#6),' 9% %>%16(%,' 9:' '
8*+2' #" #3%' *-' :%(' 4&#9"%3
h' A#&' (0% C#(0*1' 1 &% #" (0% 96*',*+2-' +,' -((6%-' -%% --*#,#&*6-' ^ &' (' * '
D]U' *(' <.J' *!' <GJ' !**' ' <' /R' +,' (0% "%-* +' A& 2 3 %+(' ^4' 5<Z' Vc' 5`' +0H+
_ 26 &% 9&*18-' I ! =' 0 !% 9&#+' *'#6+,' $*(0' 0%#, &*,-' + 3 %' 5 '
_ 0%#*"%&*1#' A%"*>' #3 ' %% C&%2#&#!*6-' \ %- 0' ,%& (,(#3 ' ' < . b
? + &' &**' <' 0%-% 0#&-%-' #" #+(% ! ""# 0 ,' 9%%+' (& +-4#&(%,' '&#3'
"%> +,&*' (# (0% 9 (0Z #" #+-(+(*+%' ^ &,*+*' 4' R' 0%*&' -16"4(6&%*-' ,*-K
, *+%,' 9:' (0% 99 ' 3 9#-' ^ %' "%>*#+-' -6& " ' #E*%' N(-6& " ' +(6&% ' (# 3 ' '
-%1(*#+' <5 ' +,' ,3*&%,' 9:' *+%8%"3 ++' ^ *-(',%' T &(' (# 3 ' **' 4' < R
& ' <G,' 0%:' $%&%' 4&#9 9":' ' '& 2 3%+(' #" -# 3%' (&*6 3 40 "1 &'
^ 64%&' ,%' "%40 + -' **' " R
$' &#1#4*6-'^C#(0' 3 *!' 1' D*V &%" (%-' ' '##"*-0' -(#' :&#+!-' 1 $' $0*10' *-' '
1%"%9& (%,'9:' (' *%' "-%' $*(#" (0*&(: -*> C&%%8' %4*2& 3' -' ^ +(0#"#2' 3' *!' 4' <G< <G '
%,*(' %+' (3 0' 6-# ' 4*2& 3' !*** 0(!***a' 0
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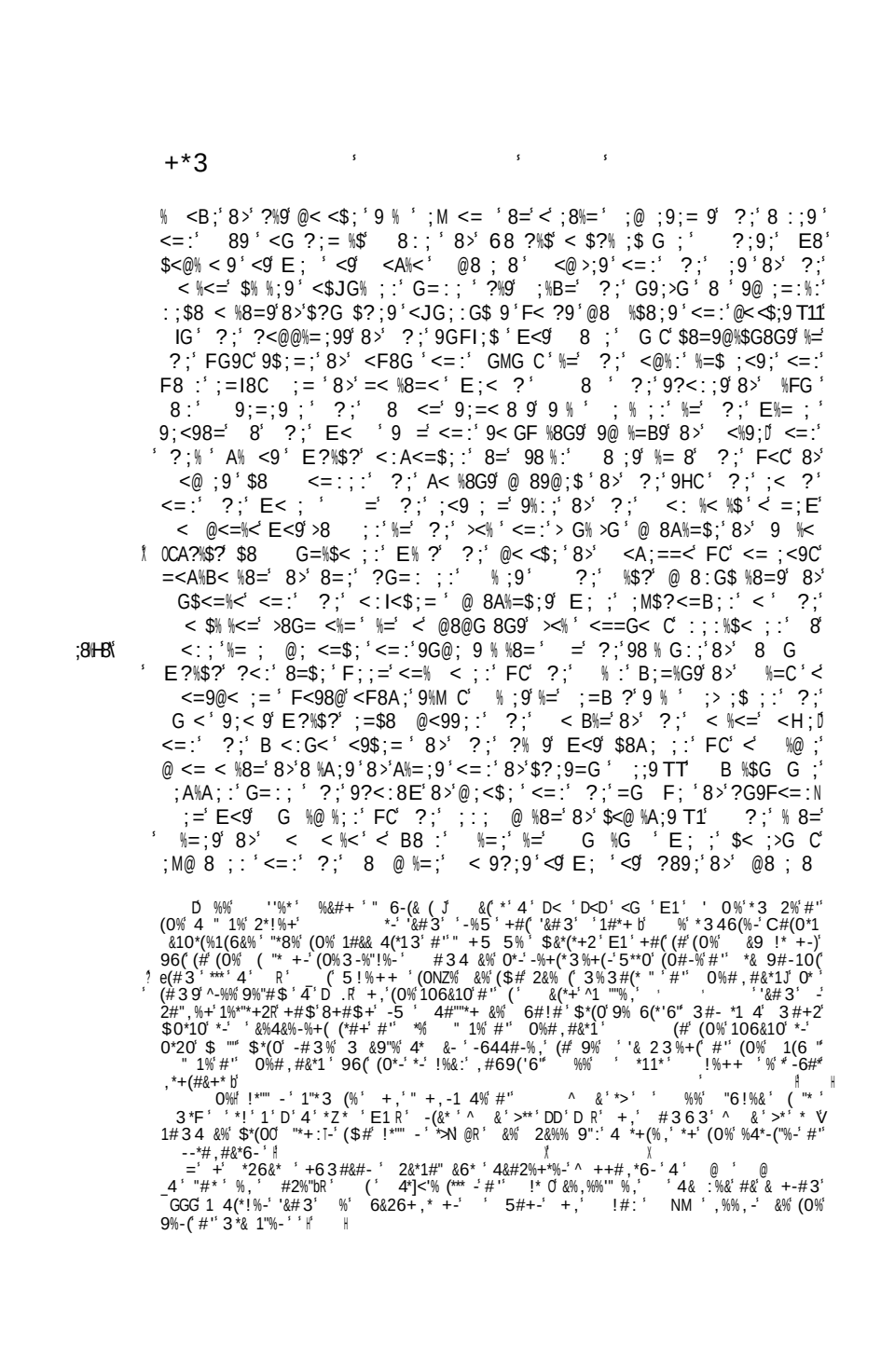

were drained and cultivated by private undertakers, whose distant reward must depend on the continuance of the public prosperity.[85] Whenever the seasons were less propitious, the doubtful precautions of forming magazines of corn, fixing the price, and prohibiting the exportation, attested at least the benevolence of the state; but such was the extraordinary plenty which an industrious people produced from a grateful soil that a gallon of wine was sometimes sold in Italy for less than three farthings, and a quarter of wheat at about five shillings and sixpence.[86] A country possessed of so many valuable objects of exchange soon attracted the merchants of the world, whose beneficial traffic was encouraged and protected by the liberal spirit of Theodoric. The free intercourse of the provinces by land and water was restored and extended; the city gates were never shut either by day or by night; and the common saying, that a purse of gold might be safely left in the fields, was expressive of the conscious security of the inhabitants.[87]

Theodoric an Arian

A difference of religion is always pernicious and often fatal to the harmony of the prince and people; the Gothic conqueror had been educated in the profession of Arianism, and Italy was devoutly attached to the Nicene faith. But the persuasion of Theodoric was not infected by zeal, and he piously adhered to the heresy of his fathers, without condescending to balance the subtile arguments of theological metaphysics. Satisfied with the private toleration of his Arian sectaries, he justly conceived himself to be the guardian of the public worship, and his external reverence for a superstition which he despised may have nourished in his mind the salutary indifference of a statesman or philosopher. The Catholics of his dominions acknowledged, perhaps with reluctance, the peace of

His toleration of the Catholics

[85] The political economy of Theodoric (see Anonym. Vales. p. 721 and Cassiodorius, in Chron.) may be distinctly traced under the following heads: iron mine (Var. iii. 23); gold mine (ix. 3); Pomptine marshes (ii. 32, 33); Spoleto (ii. 21); corn (i. 34; x. 27, 28; xi. 11, 12); trade (vi. 7, vii. 9, 23); fair of Leucothoe or St. Cyprian in Lucania (viii. 33); plenty (xii. 4); the cursus, or public post (i. 29; ii. 31; iv. 47; v. 5; vi. 6; vii. 33); the Flaminian way (xii. 18). [An inscription records the draining of the marshes, which had flowed over the Appian way between Tripontium and Terracina. A copy of this inscription stands in the Piazza of Terracina. Cp. C.I.L. x. 6850, p. 690, and see Appendix 8.]

[86] LX modii tritici in solidum ipsius tempore fuerunt, et vinum xxx amphoras in solidum (Fragment Vales.). Corn was distributed from the granaries at xv or xxv modi for a piece of gold, and the price was still moderate.

[87] See the life of St. Cæsarius in Baronius (A.D. 508, No. 12, 13, 14). The king presented him with 300 gold solidi, and a discus of silver of the weight of sixty pounds.

the church; their clergy, according to the degrees of rank or merit, were honourably entertained in the palace of Theodoric; he esteemed the living sanctity of Cæsarius [88] and Epiphanius,[89] the orthodox bishops of Arles and Pavia; and presented a decent offering on the tomb of St. Peter, without any scrupulous inquiry into the creed of the apostle.[90] His favourite Goths, and even his mother, were permitted to retain or embrace the Athanasian faith, and his long reign could not afford the example of an Italian Catholic who either from choice or compulsion had deviated into the religion of the conqueror.[91] The people, and the Barbarians themselves, were edified by the pomp and order of religious worship; the magistrates were instructed to defend the just immunities of ecclesiastical persons and possessions; the bishops held their synods, the metropolitans exercised their jurisdiction, and the privileges of sanctuary were maintained or moderated according to the spirit of the Roman jurisprudence. With the protection, Theodoric assumed the legal supremacy of the church; and his firm administration restored or extended some useful prerogatives which had been neglected by the feeble emperors of the West. He was not ignorant of the dignity and importance of the Roman pontiff, to whom the venerable name of POPE was now appropriated. The peace or the revolt of Italy might depend on the character of a wealthy and popular bishop, who claimed such ample dominion both in heaven and earth; who had been declared in a numerous synod to be pure from all sin, and exempt from all judgment.[92] [A.D. 498, November] at his summons the chair of St. Peter was disputed by Symmachus

[88] Ennodius in Vit. St. Epiphanii, in Sirmond Op. tom. i. p. 1672-1690. Theodoric bestowed some important favours on this bishop, whom he used as a counsellor in peace and war.

[89] Devotissimus ac si Catholicus (Anonym. Vales. p. 720); yet his offering was no more than two silver candlesticks (*cereistrata*) of the weight of seventy pounds, far inferior to the gold and gems of Constantinople and France (Anastasius in Vit. Pont. in Hormisdâ, p. 34, edit. Paris).

[90] The tolerating system of his reign (Ennodius, p. 1612, Anonym. Vales. p. 719. Procop. Goth. l. i. c. 1; l. ii. c. 6) may be studied in the Epistles of Cassiodorius, under the following heads: *bishops* (Var. l. 9; viii. 15, 24); *immunities* (i. 26; ii. 29, 30); *church lands* (iv. 17, 20); *sanctuaries* (v. 14, 47); *church plate* (xii. 20); *discipline* (iv. 44); which prove at the same time that he was the head of the church as well as of the state.

[91] We may reject a foolish tale of his beheading a Catholic deacon who turned Arian (Theodor. Lector, No. 17). Why is Theodoric surnamed *Vafer* (Vales. ad. loc.). A light conjecture.

[92] Ennodius, p. 1621, 1622, 1636, 1638. His *libelli* (p. 48, 76, ed. Sirmond) approved and registered (synodaliter) by a Roman council (Baronius, No. 6. Franciscus Pagi in Breviar. Pont. Rom. tom. i. p. 249). [illegible] observed that Ennodius applies [illegible]

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8 ' G C' $8G :' ?<A;' <$H=8E ; : B ; : ' >8 ' ?;% ' $8G= C <= ' 9' <' E ;< ?C' 8 @?<=' ?;' %=?; % ; :' ?;' @< % 8=C' <=:' ?8=8G 9' 8>' ?;' G%$%<=' >< % C ' <' =< ;' < F% %8G9 C' <99G ; :' FC' ?;' H%=B9' <=:' ';; @; 8 9' 8>' ?;' <B;' D <=:' ?;' <@@; < %8=' 8>' <= %G9' <99; ; :' ?%9' B ; =G%=;' 8 ' ><FG 8G9' : ;9$;= ' > 8 ' <' <$;' 8>' $8=9G 9' <=:' : %$ < 8 9 ' ', E %8' ?<:' ;@G 9 ; :' ?;' 6<G 9' > 8 ' ?;' <@% 8 ' <=:' 9<$ %>%$; :' ?;% ' 98=9' 8' ?;' :%9$%@ %=;' 8>' ?;' ;@GF %$ ' =' ?;' C8G ?' 8>' 8; ?%G9 ' ?;' 9 G:%;9' 8>' 8 ;' E ; ;' =8 ' 8 < C' <F<=:8=; :' D <' % B% ' %9' =8E' ;M <= ' $8 ;$; :' FC' ?;' ?<=:' 8>' <' $8=9G D <=:' ?;' @ 8N >;998 9' 8>' B < < ' ?; 8 %$ ' <=:' IG %9@ G : ; =$; ' E ; ;' <%= <%=; :' %=' ?;% ' @ %A% ;B ; 9' <=:' @; =9%8=9' FC' ?;' %F; < % C' 8>' ?;' 68 ?9 ' G ' ?;' ; G:% %8=' 8>' ?;' < %=' <=BG<B ; ' E<9' %=9G>%$%;=' 8' 9< %< ;' ?%9' < : ; =' $G %89% C <=:' 8; ?%G9' %9' 9<%:' 8' ?<A;' ; @ 8C ; :' ;%B? ; ; =' <F8 %8G9' C ; < 9' %=' ?;' 9$?88 9' 8>' ?;=9 # 01' E?%$?' E ; ;' 9G@@: ; :' FC' ?;' L ; <' ?;' ; < =%=B' <=:' ?;' : % %B ; =$;' 8>' 8$ G9' <=:' ?%9' :%9$%@ ; 9' ?;' ;<98=' <=:' @%; C' 8>' ?;% ' 8 <=' @G@%' E ; ;' >8 G=< ; C' 9<A; :' > 8 ' ?;' $8= <B%8=' 8>' C9 ; C' <=:' <B%$' E?%$?' @8 G ; :' ?;' B 8A ; 9' 8>' ?;' <$<: ; C D' FG ' ?;' % F%F ; :' ?;' 9@% % ' <=:' % % < ; :' ?;' ; ?8 : ' 8>' ?%9' : ; <:' <=:' %A%=B' <9 ; 9' E?8' < ; @ ; :' 8' ;$8=$% ;' ?;' 9 8=B' <=:' 9GF ;' 9 ; =9 ; ' 8>' %9N 8 ;' E% ?' ?;' : ; A8G ' $8= ; @ < %8=' <=:' 9GF % ;' ><=$C' 8>' < 8 Y 8 %:<G\ > ; ' ?%9' ; G =' 8' 8 ;' <=:' ?%9' < %<B;' E% ?' ?;' :<GB? ; ' 8>' ?%9' > %; =: ' ?;' @< %$%<=' C <$?G9 ' 8; ?%G9' 9 % ' $8= %=G ; : ' %=' <' @< <$;' 8>' %A8 C' <=:' < F ; 8' @ 89 ; $G ;' ?;' 9< ;' 9 G:%;9 %1# ?;' $?G $?' E<9' ; : %>% ; :' FC' ?%9' @ 8>8G=:' : ; >; =$;' 8>

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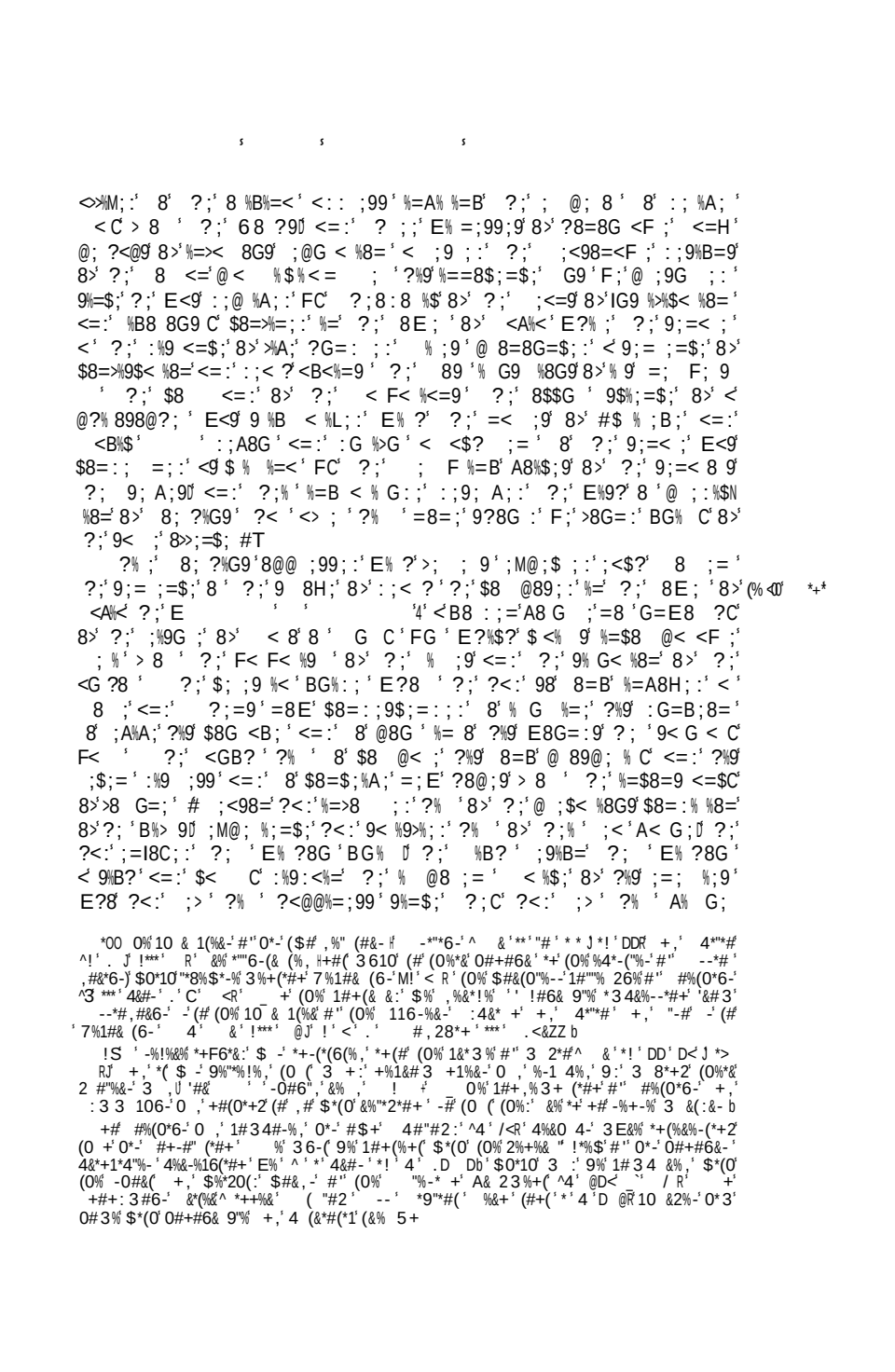
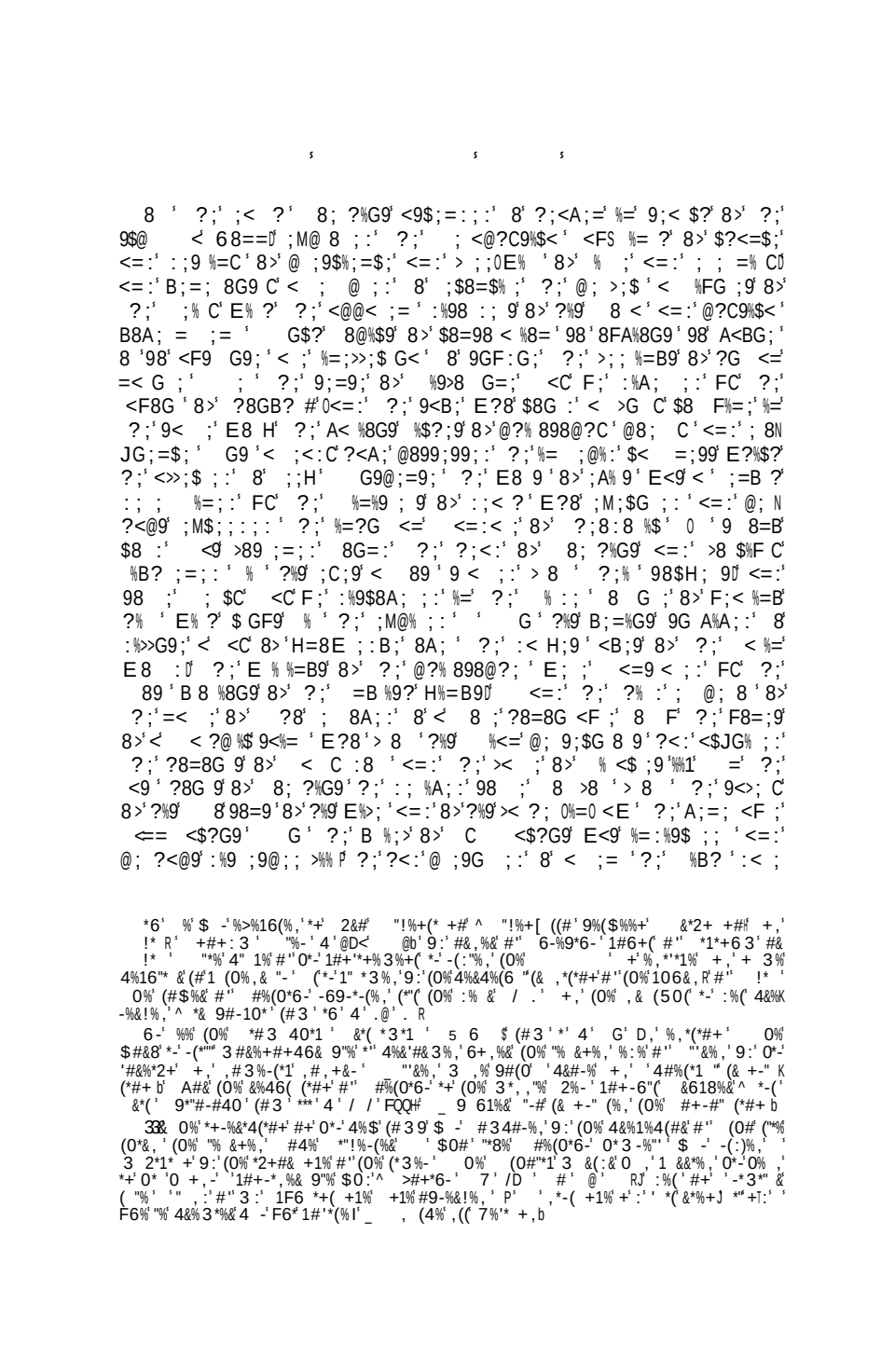
' –C" --' ' *9"*#(0%1 %' 1#3 4(#-' %9#&% 1' !*(&# 4 &*%(%-' E1' ^ #+-#"' 0*"' 3' *' 4&#-' !' 4' @.R' 0% %4*-("%-' #" ++#,*6-' ^!*' J' !**' <' !**' * ' < ' <@' . k' _D@ ' < ' <DG' .G ' . / ' . ' 4' #2%"bR' +,' --*#,#&*6-' ^ +' *' < ' Z' . /b' M *!' ' _Zb' ">' D ' _ZbR' ''#&,' 3 +:' 4&##'-' #" (0% 0*20' &%46((*#+' $0*10' 0% %+]#:%,' *+' 0*-' #$+' (* 3 %-' ' (' *-' (&6% (0 ((0% 9*-0#4' #" !* ' $ +(%,' (# 46&10 -% #'' 0*3' +' #",' 0#6-% (*" +' +,' 4& *-% 3 *20(9% (%+,%&%,' +,' 11%4(%,' *+' 4 &(#'' 4 : 3 %+(

?;' 8 ?8 : 8M' $; ; :' <B<%=9 ' ?;' VG%' ?;' G C$?%<=' <=:' ?;'
;9 8 %<=' ?; ;9%;9D <=:' ?;' < ?8 %$' G=% C' E<9' ;M@ <%=; :' 8 ' ;MN
@89; :' %=' <' >8 <' ;< %9;' FC' ?;' . @ ' 8>' ? ;;' : %9 %=$ '
?8GB?' $8=9GF9 <= %<' @; 98=9 #TT' 8 ' ?;' F;=;>% ' 8>' ?%9' < %='
;<: ; 9' ?%9' B;=%G9' 9GF % ;:' 8' ;<$?' ?;'>% 9 ' ; ; ;= 9' 8>' ?;'
< 9' <=:' 9$%;=$;9' 8>' 6 ;;$; ' ?;'B;8 ; C' 8>' G$ %: ' ?;' G9%$'
8>' C ?<B8 <9 ' ?;' < % ? ; %$' 8>' %$8 <$?G9 ' ?;' ;$?<=%$9' 8>'
$?% ;: ;9 ' ?;' <9 8=8 C' 8>' 8 ; C ' ?;' ?;8 8BC' 8>' < 8 '
<=:' ?;' 8B%$' 8>' %9 8 ;' E% ?' ?;' $8 ;= < C' 8>' 8 @?C C '
E; ;' <=9 < ; :' <=:' % G9 < ; :' FC' ?;' %=: ;>< %B<F ;' @;=' 8>' ?;'
8 <=' 9;=< 8 ' =:' ?;' < 8=;' E<9' ;9 ; ; ; :' $<@<F ;' 8>' : ;9$ %FN
%=B' ?;' E8=: ; 9' 8>' < ' <' 9G=0 : %< ' <' E< ; 0$ 8$H ' 8 ' <' 9@?; ;'
E?%$?' ;@ ;9;= ; :' ?;' 8 %8=9' 8>' ?;' @ <=; 9 ' 8 ' ?;9;'
<F9 G9;' 9@;$G < %8=9 ' 8; ?%G9' 9 88@; : ' 8 ' 8' 9@;<H' 8 ;' G C '
?;' 89;' 8' ?;' 98$%<' : G %; 9' 8>'@GF %$' <=:' @ %A< ;' %>; ' ?;' %=: %N
B;= ' E; ;' ;?;A; :' FC' ?%9' %F; < % C'D' <=:' ?%9' ; 8JG;=$; ' E?%$?'
>< ; C' %B? ' $8 @< ;' 8' ?;' A8%$;' 8>' ; 89 ?;=;9' 8 ' %$; 8 '
E<9' G=%>8 C' ;M; ;:' %=' ?;' $<G9;' 8>' %% 8$;=$;' <=:' ?G <=% C
G$?' $8=9@%$G8G9' ; % ' E<9' >; ' <=:' ;E< :;:' FC' <' :%9$; =%=B'
@ %=$;D' ?;' :%B=% C' 8>' 8; ?%G9' E<9' <:8 =;:' E% ?' ?;' % ;9' 8>'
$8=9G ' <=:' @< %$%<=' <=:' ?%9' < ;= 9' E; ;' G9;>G C' ; @ 8C; :' %=88 %<9%8\'
?;' % @8 <=' 9 < %8=' 8>' <9 ; ' 8>' ?;' 8>>%$;9 ' 8 E% ?9 <=:%=B' ', P
?;' ;JG<' $ <% 9' 8>' ?;' <9 ' <=:' ;9 ' ?%9' E8' 98=9' E ;' $;< ;:'
%=' ?;% ' ;=: ; ' C8G ?' ?;' $8=9G 9' 8>' ?;' 9< ;' C;< #TT' =' ?;' /DD'
; 8 <F ;' :<C' 8>' ?;% ' %=<GBG < %8=' ?;C' @ 8$; ; : ; ' %=' 98 ; =' ',
@8 @' > 8 ' ?;% ' @< <$;' 8' ?;' >8 G ' < %:9 ' ?;' <@@ <G9;' 8>' ?;'
9;=< ;' <=:' @; 8@ ;D' <=:' 0 ?;% ' I8C>G ' >< ?; ' ?;' G;' $8=9G ' 8>'
8 ;' <> ; ' @ 8=8G=$%=B' <=' 8 < %8=' %=' ?;' @ <%9;' 8>' ?%9' 8C<'
F;=;><$ 8 ' :%9 %FG ;:' <' %G @?<' < B;99' %=' ?;' B< ;9' 8>' ?;'
$% $G9' 89@; 8G9' %=' ?%9' >< ;' <=:' >8 % ;9 ' %=' ?%9' @GF %$' ?8=8G 9'
<=:' @ %A< ;' < %<=$;9 ' %=' ?;' $G %A< %8=' 8>' 9$%;=$;' <=:' ?;' $8=0 '
9$%8G9=;99' 8>' A% G;' 8; ?%G9' %B? ' ?<A;' F;;=' 9 C ;:' ?<@@C ' %>'
?<' @ ;$< %8G9' ;@% ?; ' $8G :' F;' 9<>; C' <@@ %;:' F;>8 ;' ?;' <9 '
; ' 8>' ?;' %>;' 8>' <=
' @?% 898@?; ' %F; <' 8>' ?%9' 0E;< ?' <=:' @< 9% 8=%8G9' 8>' ?%9' @< %8 '
% ;' %B? ' F;' %=9;=9%F ;' 8' ?;' ?;' $8 %@8=' <' G ; ;= 9' 8>' < F%0

34'5 0% 2%+6*+%+%--' #'' (0%-% (0%#"#2*1 '' (&% (*-%-' *-' 4&#!%,' 9 :' ' 4#-*(*!%' -((%K
3%+(3' (0% +%1,#(#+' #", %&' b

GG 2*' 6& (#&*' EF' &%' 2&%%,' (0 (' #%(0*6-' 0*3 -%"' $ -' 1#+-6'' *+' (0% :% &'
2*#' 0*-' ($# -#+-' *+' /DD' +,' *+' . @' 4%&0 4 -' 0*-' '#(9%&' eA#&' 0*-' '%(0%&' 6&%''*6-'
+''*6-' #%(0*6-' 14' ' ' ' ' DG' %' 0%",' (0%' #' '*1%-' #'' & %' &9*' +,'
&-%' ' &-%(b' ,%-*&%#'' -1&*9*+2' (0%' " -(' #'' (0%-%' 1$*-6"5*4-' *,' (0%' 40*"#-#40%&'
0 ,' 4%&4"%>%,' (0% 10&#+#"#2:' #'' 0*-' ''*'%' +' 0*-' 0#+#6&-' ''* +1%-' 10*", &%+' 0% '
1%'%9& (%-' 0*-'#$+' '%'*1*(:W5#' 4 -(*1*()'' e4' G ' ''*#)





8 ;A;=B; ? ;: ;< ?8><=%=IG ; :> %;=: E<9 : <BB; :%=/ .?.
$?<%=9>8 8 ;8 ;8 ?;@<<$;8> < ;==<!<=:? ;9G9@%$%8=9
8> ?;8:8 %$$8G :8=C F;<@@;<9;:FC ?;F 88:8><= %==8$;@
<=:<B;:9;=<8 #%#
G <=%C E% F; :%9@89;: 8 ;=$ G B; <=C ;@8 E?%$?
;9%>%;9 ?;IG %9:%$ %8=8>$8=9$%;=$;<=: ?; ; 8 9;8>H%=B9
<=:@?% 898@?C%9=8 %B=8 <= ?< ? ?; 89 ?8 %: @;$;9<;<%E% E
98 ; % ;9$;< ;: FC ?;@8E; 9 8><:%98 :; ;:><=$C<=: ?;
E;<H=;99 8><:%9 ; @; ;:F8:C > ; <> %;8>A% G;<=:B 8 C
?;8:8 %$E<9=8E: ;9$;=:%=B E% ?9?< ;<=: BG% %=8 ?;
B <A; ?%9 %=: E<9?G F;: FC ?;$8= <9 8> ?; @<9 <=:
IG9 C< < ;: FC ?;%=A%9%F ; ; 8 9 8>>G G % C @;;A;@%=B1
<9 %9 ; <;: E?;= ?;?;<: 8><< B;>%9?E<9 9; A;: 8= ?;
8C< <F ; %%'?;9G:;=C ;M$ <% ;: ?< ?;F;?; : %;<=BIC
$8G= ;=<=$;8> C <$?G9 ?%9 ;C;9 B < %=B >G C <=: ;A; Bd #
<=: ?%9 8G ?< ;: E% ?8=B9?<@ ; ; ?E?%$?? ;< ;=;: 8
:;A8G ?% ?;8=< $?%=9 <= C ; %;: 8?%9 $?< F; <=:
<9 ?;<C ; F %=B E% ?<BG%9?$8 : G=:; <E;%B? 8>F;:
$ 8 ?;9 ?;;M@ ;99;: %=F 8H;= G G 9 8?%9@?C9%$%<= @%:%G9
?%9 :;@ ;@;= <=$;>8 ?;% =:; 9 8> 8; ?%G9 <=: C=
<$?G9 %%T %9 <<:C%=$;<9;:<=:<> ;<;8>
$8= %=G;: ? ;: :<C9?;;M@% ;: %= ?;@<<$;8> <A;==<;%= ?;
?% C0 ?% : 8 %>E;$8 @G ;>8 ?;%=A<9%8=8><C %@ ?;
?% C09;A;=?C;<8>?%9 ;%B= 8=9$%8G9 8>?%9 <8@ 8<$?%@B
;=: ?;: %A%:;: ?%9 ;<9G ;9 <=:@ 8A%=$;9F; E;;= ?%9 E8
B <=:98=9 <=:>%M;: ?; ?8=;<9 ?;=$8 8=F8G=:<C 1#
<< %$E<9 ;9 8 ;: 8 ?;? 8=;8><@<%= <C E% ?<;?;
$8=JG;9 9 8>?;9 8B8 ?9 E<9F;JG;<?;: 8 ?< < %$ E?89;

* #%(0*6- 44" 6,- (0% !*&(6%-#'0*-' (0%& *+ " $^ '*' 4&#-' N' 4 '*33 '
4&#-'.'4' R' &#1#4*6-'^C#(0'3'*'1'*R'(0% "%-* +' A& 23%+(]4'@D.R' +,'
(0% *-(#&* *-1%"' ^3 >!'4' G/R 2&%%'*+' 4& *-*+2 (0% -64%&*#& *++#1%+1% &# #
- +1*(:'#" :3 3 106-'J +,'*+'(0%%-(*3 (*#+'#''(0%'%2%+,'(0%26*"(#'0*-'36&,%&
*-'%F6 "(# (0%*34&*-#+3%+(#' '4#4% ' _\ ' 6&%"*6- %3 3*6-' :3 3 106-' E<9
2&% (2& +,-#+'#''(0%#& (#& :3 3 106-'$0#'#620('6+,%&C& (* +' +,' 0%#,#-* -
'#&(0%,:*+21 6-%'#'' 2 +*-3 b

' +'(0%' +1*'6'%'#F6%+1%#'' --*#,#&*6-'(0%' ! &%(:'#'' -% ' +,'&*!%&''*-0' &%'
+'%!*,%+1%'#'' %>(%+-*!%' ,#3*+*#+J +,'(0#-%'#'' (0% 0*+F'#'' *1*"':' +,' '(]*%
7 +69%'$%&%-%&!%,'#+'(0%(9"%'#'' 0%#,#&*1'^ &'>** 5.R' 0% 3#+-(&#6-'(6&K
9#(#'' 7##5(*+'^ 6!%+ "' (*&' ***' <R 0 ,'0N%+' 1 620(' #+'(0% -0#&%-'#'' (0%'
,&* (*1

' &#1#4*6-'C#(0'3*'1'*' ('0%' 3*20(' 0 !%'*+'#&3%,'6-' $0%(0%& 0%' 0 ,'
&%1%*!%,'(0*-'16&*#6-' +%1,#(%'&#3'1#3 3#+'&%4#&(' #&'&#3'(0%' 3#6(0'#'' (0%'&#: '*
40:-*1* +

"'' &#1#4*6-'C#(0'0'*'1' 'D' 'Z_+' 0*-' 4%(*(*#+'0 ,'9%%+',*&%1(%,'9:'
0%#, ,R (0#620('(' $ -' +#('%>%16(%,'(*"'' '(%&' 0*-',% (0' %2+*' 9%&%,'(' (3+'
((4%&-(0'&%"*F6*(^"5#&' 0&#+'4'!2*Q %,*('^ &#+

<B ; : % : =8 ; M$; ; : ; =C ; < 9 FG E ?8 E<9 $?; %9?; : <9 ?; <9 < ; 8>>9@ %=B 8> ?; %=; 8> < % FC ?; 9?8 0 %A; : < %<B; 8> ?%9 8 ?; < <9G= ?<E %?<8C< '>GB% %A; 8> ?; 9< ; F 88: %T =?; @ ; 9; =$; 8> ?; : C%=B 8=< $? ; ?; 68 ?%$?%; >9 <=: < %<= <B%9 < ; 9 G G< C ; =B<B; : ?; % ><% ?<=: 8C< C 8 ?; C8G=B @ %=$; <=: 8 ?%9 BG< : %<= 8 ?; 0 <=: ; $; %A; : %= ?; 9< ; <E>G 8 ; = ?%9 <9 9< G < C <: A%$; 8 <%= <%= ?; <E9 8 8A; ?; 9; =< ; <=: @; 8@ ; 8> 8 ; <=: 8 $G %A< ; E% ?: ; $; = ; A; ; =$; ?; > %; =: 9?%@ 8> ?; ; @; 8 %11 ?; 8=G ; = 8> ?; 8: 8 %$ <9 ; ; $; : FC ?%9 : <GB? ; < <N 9G= ?< %= < $8=9@%$G8G9 9% G< %8= E?%$?$8 <=: ; : ?; $% C 8> <A; ==< ?; ?< F8G <=: ?; <: I<$; = $8<9 $?<@; 8> < $% $G < >8 ?% C >; ; %= :%< ; ; 9 $ 8E=; : FC < : 8 ; 8> 8=; ; = % ; @%; $; 8> B <=% ; > 8 ?; $; = ; 8> ?; : 8 ; >8G $8 G =9 < 89; E?%$?9G@@8 ; : %= < A<9; 8> @8 @?C C ?; ; <%=9 8> ?; 68 ?%$H%=B 9G 8G=: ; : FC ?; F <L; =9 < G; 9 8> ?; E ; A; <@89 ; 9 ##5 %9 9@% % <> ; 98 ; @ ; A%8G9 ; M@%< %8= %B? ?<A; F; ; =@; % ; : 8 %=B ; E% ?; F; =; ><$ 8%09 8> <=H%=: % > <= < %8= 8> ?; 8: 8 %$ Z#Z E?89; 98G E<9 @ G=B; : FC ?; %=%9 ; 9 8> : %A%=; A; =B; <=$; % = 8 ?; AG $<=8 8> %@< % 8=; 8> ?; > < %=B 8G ?9 8> ?; %=>; =< E8 : ##

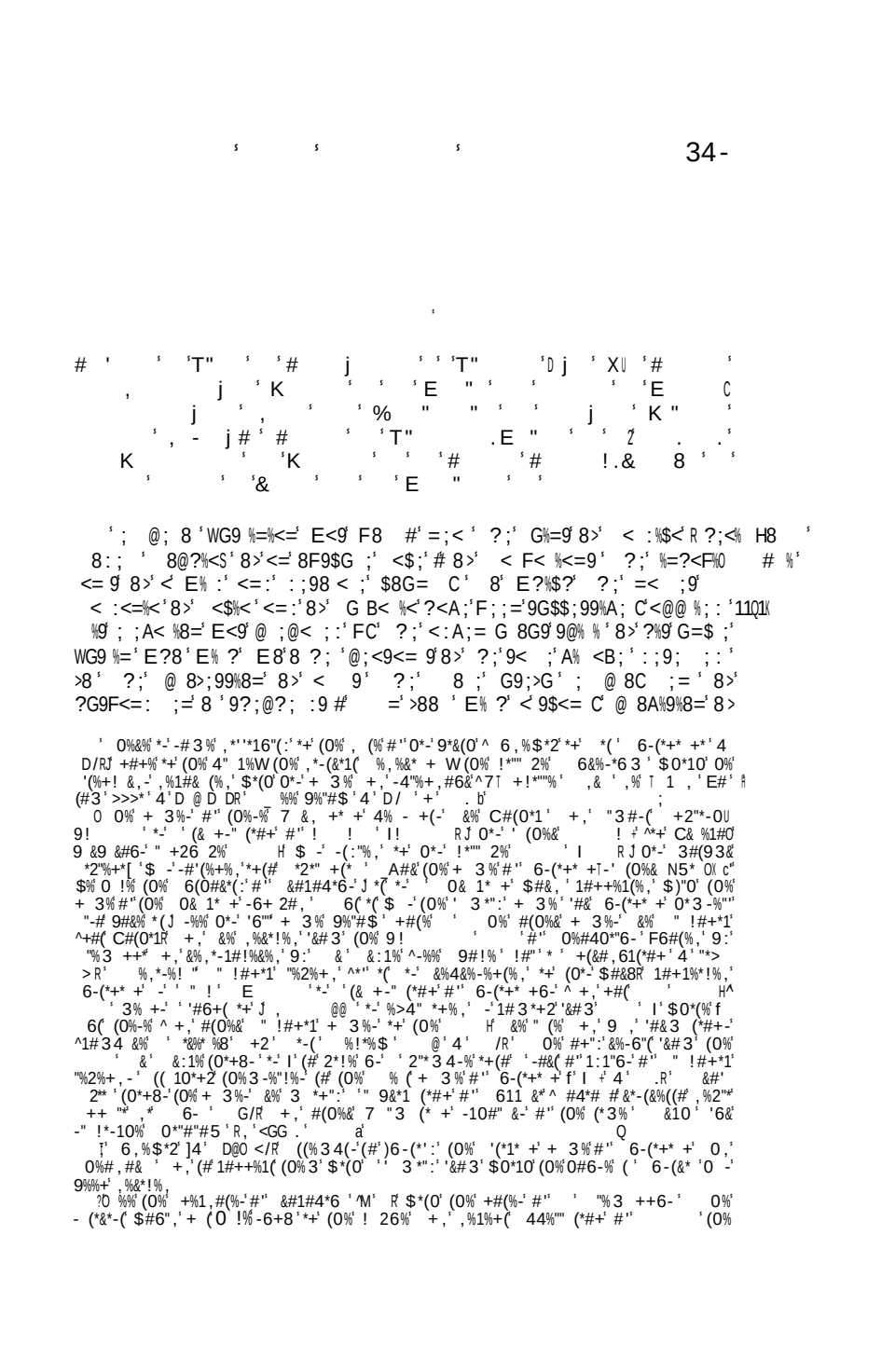
33" %&*36+, (0% (0*&, *+ , %-1%+" '&#3 %&3 +&* 8*+2 #"(0% -(&#2#(0- 0 , &%(*&%, *+(# 4 *+ $0%&%0% "*!%, +, , *%, *+ #9-16&*(: ^ #&+ , %- 1 << 4 DG<, *(' 6' (#&'R %% (0% , *-1#!%&:R +64(* "- + , , % (0 #" 0*-2& + , -#+ 6(0 &*% ^1 / '4 DDGR' *- #3 +2 3%-3*20(&%+, %&0*3 4#46" &^ --*#, #&*+ 0&#+ R 96(6*0 *!*1 $ - -4%& *+ &%"*2*#+%^ +#+: 3 "%- 4 @DD @D< _ GbR

** !%%(0% 1#6+-%"- #" 0%#, #&*1 +, (0% 4&%1%--*#+- #"0*- -611%--#& *+ &#K 1#4*6- ^C4(0 3 *1 DR #&+ , %- ^1 / 4 D G DD a +, --*#, #&*6- ^ &! *** @R 0%-%%4*-("%- &%(0% (&*6 3 40 #"0*- 3*+*-(%&* "%"#F6%+1%

DG +#+: 3 "%- 4 @D. 2+%""6- , % *(*- #+(' !%+ +& 6& (#&* 1&*4(% +*3 ("(#3 ** ' *4 @' "9%&(* 7%-1&*((*#+%", "(** 4 < +(0%(*3% #" 2+%""6- (0% 9#, .:#" "%#, #&*1 $ -"+#"#+2%& *+(0% 3 6-#"%6 3 +/. $#&8K 3%+ '#6+, -8%"%(#+ $*(0 2#", %+ 16*& --+, 0%"3%(-#3%06+, &%, : &, -'&#3 (0% (#39 (*-0%", 9: (0% &10 %#"#2*-(#" !%++ *11*' (0 (0*- $ -(0% 9#, :#" 0%#, #&*1J #(0%&-0 !%+ +*%, , #! 1 & 0% 2#", &3#6& $ -0*, , %+ +, 3%"(%, , #$+9: (0% , *-1#!%&%&- 96(-#3% 9*(-#" (0% 16*& --$%&% &%-16%, +, &% *+ (0% 36-%63 (!%++ & #, 28*+0 -' +1*'6" 1#+)%1(6&% #+ (0% &%3#! #"(0% 9#, : ***' / <b

D 0*-"%2%+, *- &%" (%, 9: C&%2#&: ^7* "#2 *! <GR +, 44&#!%, 9: &#+*6- ^ 7 /D #' D R , +, 9#(0 (0% #)5 +, &, *+ &% 2& !%, #1(#&- -6''1*%+(#%-(9"*-0 '#4*+*#+

DD 0%4, #+1 0*3-%"' #& (0%& --*#, #&*6- 0 , %-1&*9%, *+ (& 2*1 -(& *+- (0% !6"1 +#-#" *4 &* ^ "6!%& g*, "* 4 .G 5. G +, %-6!*6- ^*! /GR



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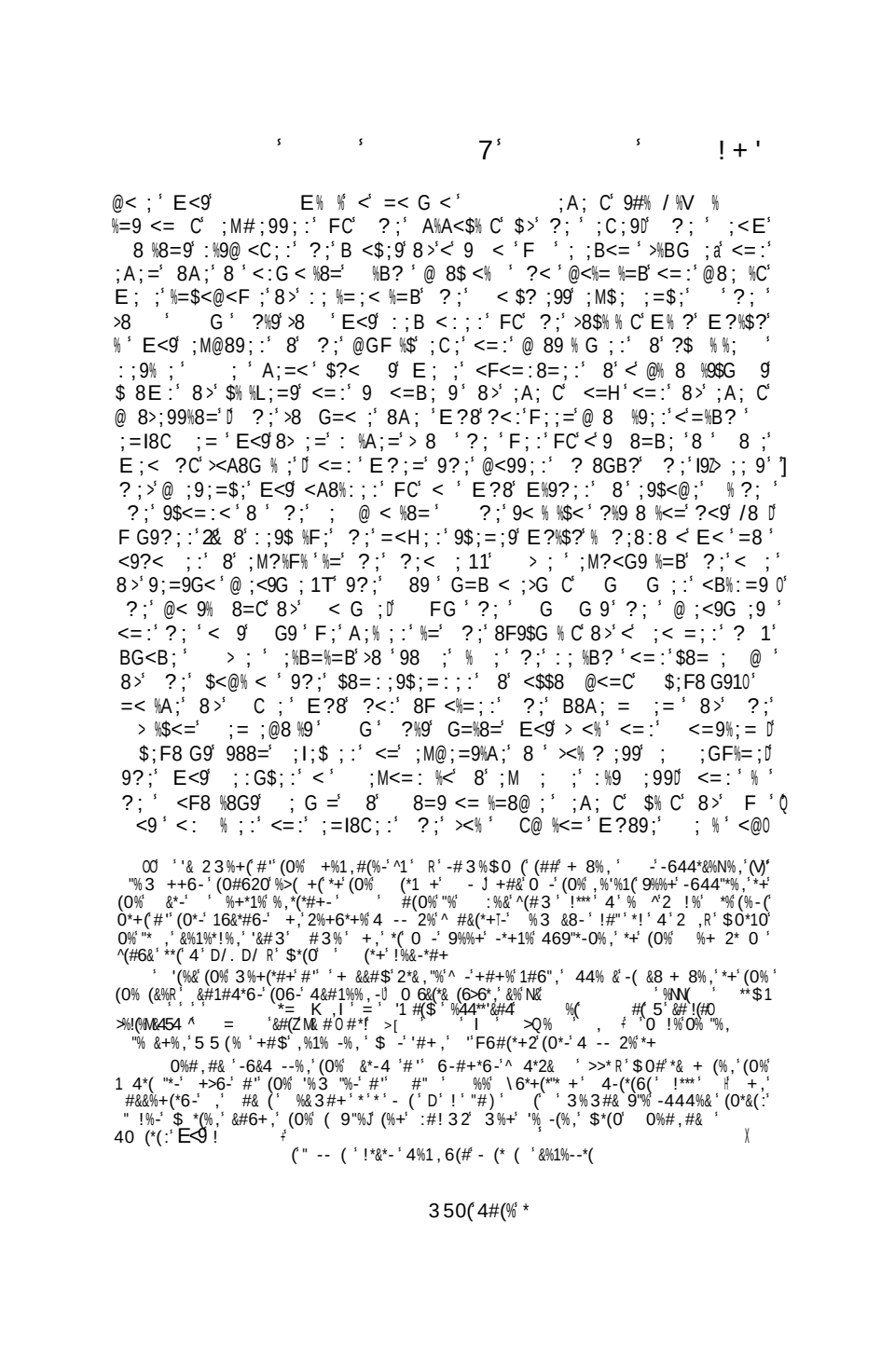
tivated the friendship of the senate. That venerable name seemed to qualify its members to declare the sense of the nation, and to regulate the succession of the Imperial throne; the feeble Anastasius had permitted the vigour of government to degenerate into the form or substance of an aristocracy; and the military officers who had obtained the senatorial rank were followed by their domestic guards, a band of veterans, whose arms or acclamations might fix in a tumultuous moment the diadem of the East. The treasures of the state were lavished to procure the voices of the senators, and their unanimous wish, that he would be pleased to adopt Justinian for his colleague, was communicated to the emperor. But this request, which too clearly admonished him of his approaching end, was unwelcome to the jealous temper of an aged monarch, desirous to retain the power which he was incapable of exercising; and Justin, holding his purple with both his hands, advised them to prefer, since an election was so profitable, some older candidate. Notwithstanding this reproach, the senate proceeded to decorate Justinian with the royal epithet of *nobilissimus*; and their decree was ratified by the affection or the fears of his uncle. After some time the languor of mind and body, to which he was reduced by an incurable wound in his thigh, indispensably required the aid of a guardian. He summoned the patriarch and senators; and in their presence solemnly placed the diadem on the head of his nephew, who was conducted from the palace to the circus, and saluted by the loud and joyful applause of the people. The life of Justin was prolonged about four months, but from the instant of this ceremony he was considered as dead to the empire, which acknowledged Justinian, in the forty-fifth year of his age, for the lawful sovereign of the East.[11]

The reign of Justinian. A.D. 527, April 1; A.D. 565, Nov. 14

From his elevation to his death, Justinian governed the Roman empire thirty-eight years, seven months, and thirteen days. The events of his reign, which excite our curious attention by their [illegible] variety, and importance, are diligently related by the [illegible] of Belisarius, a rhetorician whom eloquence had pro[illegible] to the rank of senator and præfect of Constantinople. A.D. 562]

[illegible]er Justin may be found in the three Chronicles of Marcel[illegible] Malala (tom. ii. p. 130-150), the last of whom (in spite of [illegible]4, 39, edit. Oxon.) lived soon after Justinian (Jortin's re[illegible]3 [cp. App. 1]); in the Ecclesiastical History of Evagrius [illegible] the Excerpta of Theodorus (Lector. No. 37 [p. 565, ed. [illegible]s (p. 362-366 [i. 636 *sqq.*, ed. Bonn]), and Zonaras (l. [illegible] may pass for an original. [Cp. George Mon., ed. Muralt,



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9 (0')*F ' 10 &*(:'*+'0*-'(%34%&
#+ 4 &%'(0%' +%1,#(%-' ^1' Z5H' $*(0' (0%' ,*'*1%-'^ ' *'1' 24 '* *&' ,*'*%&%+"":'
" !'(0%)5 3%' ' 1(9%' -((%,2 %0+' " " ' ^(#&+' . '4' @.' @/ .. ' ;:0' #++bR'
#9-%+% ' 05 (G&'(*)-' #&' ' -*3*"-(" #11 -*#+' -0%' & "% -5' +,' 1"#(0%,' (0%' 2*&"-'
0#'3 9%'0 ,'46&10 -%,'&#3' (0%' (%$-' ('*!%' 6&%"' 4*N#%
? #!%"' !* ')(:" ' %, ' Y 10 " ' +' ""(*-*#+' (#' 0%#,#& ' %&' %+%3*%-'
'0%' + 3%'4 - ,+#,#& '^ "%((%3' 4' QQ^+' ^ &' (0%&

9< %< ; :' E% ?' 4A; ' C ; ' 98 ;' <@@ <G9;' %9' :G;' 8' ?;' >% =;99 8>' <' %=:' E S_$_% $8G :' 9<$ %>%$;' @ ;<9G ;' <=:' ?<F%' 8' ?;' 9 8=B; ' 9;=9;' ;% >; ; ' ->' : G C' 8 ' %= ; ;9 ' ?;' E%9?;9' <=:' @ <C; <' 8>' F;F:8 <' $8G :' = ;# ' 8F <%=' ?;' F ;99%=B' 8>' <' <E>G' 98=' <=:' 9?;' FG %; :' <=' % < #' :<GB? ; ' ?;' 98 ;' 8>>9@ %=B' 8>' ?; ' < %<B; T# 8 E % ?9 <=: %=B' ?%9' :%9<@@8%= ;= ' ?; ' :8 %=%8=' E<9' @; <=;= ' <=:' < 98 G ;'D 9?;' @ ;9; A; ' FC' < ' 8 ' ; % ' ?;' <>>;$ %8=9' 8>' WG 9 %= %# %D <=:' ?;% ' 9;; %=B' :%99;=9%8=9' E; ;' < E<C9' >< < ' 8' ?;' $8G %; 9' E?8' F; %; A; :' ?; ' 8D F;' 9%=$; ;' ; ?<@9' ?; ' ?;< ?' ?<:' % ;;=' % @<% ;:' FC' ?;' %$;= %8G9=;99' 8>W%; ' C8G ?'D FG ' % ' E<9' <#<C9' : ;%$< ;' <=:' 9?;' E<9' :% ;$; :' Q FC' ?; ' @?C9%$%<=9' 8' G9;' C ?%<=' E< ' F< ?9' =' ?%9' I8G =;C ' ?;' ; @ ;99' E<9' >8>%BE;:' FC' ?;' @ <; 8 %<=' @ <;>;$ ' ?;' B ;< ' ;<9G ; ' 9;A; <' $8G=?1' @< %$%<=9' <=:' <' 9@ ;=:%:' <%=' 8>' >8G ' ?8G9<=:' < ;=:<= 9!0 F;' ?%B?E<C9' E; ;' ;@<% ;:' < ' ?; ' <@@ 8<$?D <' @< <$;' E<#' ; ;$;:' >8 ' ?; ' ;$;@ %8=D <=:' <9!0 9?;' @<99;:' ? 8GB?' % >C=%<' 9?;' :%9 %FG ;:' %F; <' < 9' 8' ?;' $?G $?;9' ?;' 8%E9 ; %;9' <=:' ?;' ?89@% <9' ?<' ?;C' %B?' % @ 8 ;' ?;<A;=' ?;' ;9 8 < %8=' 8>' ?; ' 8[?;' ?;< ?2'"' ;=B ?' %=' ?;' E;= C0 # F'C;<' 8>' ?; ' < %<B; ' <=:' ?;' E;= C09;$8=:' 8>' ?; ' ;%# ' 9?;' E<9' $8=9G ;:' 3# <' $<=$; D <%%:' ?;' % ;@< <F ;' 899' 0A% <9' :;@ 8 ;:' FC' ?; ' ?G9N F<=:' E?8' %=' ?;' 88 ' 8>' <' ?;< %$< #H@ $9F G ;' %B?' ?<A; 9; ;$;:' ?;' @G ;9' <=:' 89' =8F ;' A% B% ?8>' ?;' <9 1T ' ' < ; %<' :%>>; ;=$;' <C' F;' 8F9; HA;:' %=' ?;' B< ;9 8>' <= %JG% C' ?;' 89' ; %=;=' 8>' ?;' V& ; #H9' E; ;' <$ 8 9' ?;' 8 <=9' E;%;' ; ; C' 9@;$ < 8 9' ?;' E %=@%$ <:%G ' <9 8@;=' 8' E;< ?' ; % ' <=:' < F% %8=D <=:#%E %>' ?;' $<=:%:<;' $8G :' :;@;=:' 8?' ?;% ' @; 98=<' 9H% ' <%%:' <$#=A% C' ?;C % B?' @G 9G;' ?;' >88 9 ;@9' 8>' %8 ;:;' <=:' ;=; <#G9' <=:' $8=:G$

(' 9 -' &%'6-%,' (#' 4& :' '#&' '-#+' #'' 0%#,#& ' '"%-(' -0#6",' 4&#!%' +' 0%&%(*1' $#&-%' (0 +' + -(-* -' 0*3 -%"!' ^ :&*"' *+' *(' (' 9 % 55 46,' '"%3 +'4' @G ' G R

&"' %%' #0+' " " ' (#3 ' **' 4 ' @.'_.. b' 0%#40 +%-' 4 ' &#1#4+ ,%' %,*'*1' 3' ! ' 1 ' <

U ' 0%#,#& ' 0'"1%,#+%+-*-' -:+#,*' *+**0*1 ' 1 +1%&*-' 4" 2,' (#(#i *4#&%'(#(#b'4%&'6- ' !*(& ' 4&#,*2*#-%' '*+*!*(^ *1(#&' 6(*6+%(*-*-' *+H = ') * W%0 9G$?' 8$$<9%8=9' <=' 8 ?8:8M' %=:' %9' 9 ;; ;:' ; <=?G9' %T ' 1&S' G=:; 9 <=:9' ?;' 8>' ?;8@? %<=BG<# ' E %%$?' :8;9'=8 '% @ C';% ?; '@%; C' 8 ' #%;? <=;;#' C; ' E8'C;<' ' :;<?' ' ?;8:8 <'%9'$; ;F < ;:'FC' <G ' % ; %< %8 'R%=' 8@ ' A ' 9"0(aZ

V 9' 9?;' @; 9;$G ;:' ?;' @8@;9 ' <=:' ;I;$;:' <'$8G=$% ' < 8=%=9' ;M?<' =< ;9'8>' !%' 7 "*"(' ; 8:%<9 ' ($ J <> ; ' $0*,*0%'?<9' ;$8G 9;' (#' F%9' :%$ %8=< C'P $%A%9'%=>; ?%#< G =<':9; 8=G j 9< <=%$8'<B% < <'9@% % G j 8 ;9= # >@0' % <':%<F8 %$8 ' LIC' L ' M ' /. ' 8 ' \.M2

?;%' 8E=' ?8 9;g' %=' ?;' <@%:' ;=' E;= C
$?< %8 g' E; ;' < 8E;:' 8' 9 < ' % ' ?#' >' 89 # 'l' <' %% d'
;<A;g' E<g' ?;' ;E< :'8>' ?;'A%$ 8 /./:' g' (=;'E%#'#/ '8>'
?%g' >< %C' <=:' $8G= C' E<g' $?=G= ;:' %=' C %$' 9 <%=g' 0 9<E'
:G <F ;' ?<=' 8=G ;= g' 8>'F <99g' <=:'= < F ;' G '<' 9;=< 8 '8 '
;A;=' <' $% %L;='$8=9$%8GG' 8>' ?%g' :%B=% C' E8H :' ?<A;' =9c8:')4'
;M@89;' ?%g' @; 98=' 8' ?%g' ?8 9;g' %=' ?;' ;% $<g' 8>' V =;'
B< ;g' E; ;' ;M?%F% ;:0' < ' ?;' ;M@;=9;' 8>' ?;' ;@GF %$' %: ;'
<B%9 < ;9 8' ?;' ; @; 8 g' FG' ?;' ;%=g' E; ;'<F<=:8=;:' 8'
9; A% ;' ?<=:9' <=:' %>' ?;' @ 8>% g' 8>' <' ><A8G % ;' $?< %8 ;; 'h8=#'
% ;9' ;M$;;:;:' ?89;'8>' <=' <:A8$< ;' ?;C' G9' ?;'$8=9%:##% %'
?;' ;>>;$ g' 8>' @8@G <' ;M <A<B<=$;' <=:' ?;' ?%B?' E# ' 8>'<'
:%9B <$;>G' @ 8>;99%8=' ?;' <$;' %=' % g' >% 9' %=9 % G %8=' <<' <'
9% @ ;' $8= ;9' 8>' E8' $?< %8 9' E?89;' : %A; g' E; ;' V?9 %=BG? ?$:'
FC' 8 ' <=:' ' %A; %;9 E 8' <:: %8=<' $8 8<=9' <' %B? '
<=:' <' $<; G ;<=' 0 " ' E; ;' <> ; E< :g' %= 8:G$;:0' <=:' <g' '
<$;g' E; ;' ;@;< ;:' E;=C0>%A;' % ;9' 8=;' ?G=: ;:' $?< %8 g' $8 '
%FG ;:' %=' ?;' 9< ;' :<C' 8' ?;' @8 @' 8>' ?;' $% $G9' %d' >8G '
' 988=' <$JG% ;:' <' ;B<' ;9 <F %9? ;= '<=:' <' 1=C9 ; %V#'
8 %B%=0' <=:' ?;% '><=$%>G' $8 8G g' E; ;' :; %A;:' > 8 ' ?;' A< H#'
<@@;< <=$;g' 8>' =< G ;'%=' ?;' >8G' 9;<98=g' 8>' ?;'C;< p' ?;' ;:'
:8B09 < ' 8>' 9G ; ' ?;' 9=8Eg' 8>' E%= ; ' ?;' :;;@' 9?<:;g' 8>'
<G G ='<=:' ?;'$?;; >G'A; :G ;'8>' ?;'9@ %=B' <8 ?;' %?' #'
@ ; < %8=' @ ;>; ;:' ?;' ; ;= g' 8' ?;'9;<98=9' <=:' ?;'9 G# ;'
8>' ?;' B ;;=' <=:' F G;' E<g' 9G@@89;:' 8' ;@ ;9;=' ?;' $8% % '
8>' ?;' ;< ?' <=:' 9;<' ?;% ;9@;$ %A;' A%$ 8 %;9' <==88 ;;:'
;% ?;' '<' @ ;= %>G' ?< A;9' 8' <' @ 89@; 8Gg' =<A%B< %8=' <=:' >;'
?89 % % C' 8>' ?;' ?G9F<=: ;=' <=:' < %=; g' E<g' 98% ;E?<' ;99'
<F9G :' ?<=' ?;' F %=:' < :8G '8>' ?;' 8 <=' @;8@ ;' E 8' :;A8 ;:'
?;%' %A;g' <=:' >8 G=;g' 8' ?;' $8 8G ' E?%$?' ?;C' ?<:' ;9@8G9;:0'
G$?' >8 C' E<g' :%9:<%=;:' <=:' %=:G B;:' FC' ?;' E%9;9' @ %=:;9'
FG K ?;' =< ;g' 8>' <%BG <' ; 8' % ; %G9' d G9' 8 :G9'
< <$< <' <=:' <B<F9:G9' E; ;' ;= 8 ;:' %=' ?;' G;' 8' B ;;=

? ;* % ,' +,' '%,' (0%' >>***,' 9##8' #'' (0%' "* , ' ' 0!*+2' 4*1(6&%' #'' ($ +#%&-'
4 --*#+-' +,' (0%' $0#"%' '#& 3' +,'-4*&*(' #'' 50%' 10 &*#('& 1%' %-(-' 4*--%&((*#+'
#+' (0%' (:3 4*1' 3 %-'^-%1(' >** >&** R' ''#&,-' 3 610' 16&*#6-' +,' 6(0%+(*1'*+'#& 3 H'
(*#+'

? ; 0%' '#6&' 1#"#6&-' ' !F ' ' P '&%4&%-%+(' (0%' '#6&' -% 6+ '
11#&,*+2' (#' --*#,#&*6-'^ &' *' -M'? $0#" !*-0%-'+ 0' $*(' +,'
(0*-' (0% (&*1 '' 3:-(%&:' '' (0%-%'1#"#6&-' (0%' (0&%%'*&-(' 3 :'9%' :'(& +-" (%,'
8 1' ' +,' ' ! *-'%>4" *+%,' 9:' ! ' '$#&,' ! &*#6-' ((5'
! 26%' J *(' *-'4&#4%&":'(0%'-)(:'&%'"%1(%,' *+' (0%-% J' 96('16-(#3' +,'1#+!%+*%+1%'+& :'
,'"#$' NQM' -' +'%F6*! "%+(' e #9%&(' (%40 +' 5 '!#1%' 4%+1%'-' #":(+%((-' H'S '
? YM2

<<E >%%$ I8=9 8> ?;$% 8Gb ?;C >;JG;=;: ?;>9 <F ;9 <@@ <G:;: ?;% >% A8G % ;9 $?<9 %9;: ?;% <I <B@=%9 9 <=:;9; A;: ?; ;;19.=8> ?;@#%:<;;FC ?;=< G <8 <>>;$;:% % <%8= 8> ?;% <==;9 ?;F 88:C <=: G G G8G 8$= ;9 8$= %=G;: 8:%9 G F ?;@GF %$>;9 %A% C % ?;<9 <B;8> ?;9@;$ <$;9 8> 8 ; <=: ?;8:8 %$>8 <8 %A;8> IG9 %$;8 <>>;$ %8= %= ;@89;: ?%9 <G ?8 % C 8@ 8;$?;B ;;=9 <B<%=9 ?;A%8 ;=$;8 > $8=9G <=: <@< %$%<= E?8 E;;@<99%8=<;C <:: %$;:8 ?; F G;><$ %8=8> ?;$% $G9 1#

8=9 <= %=8@ ;:<:8@ ;: ?;>8 %;9 ?8GB?=8 ?;A% G;9 8> <=$%;= 8 ; <=: ?;9< ;><$ %8=9 E?%$?><:<B% <;: ?; $% $G9 <B;:E% ?;:8GF ;:>G C %= ?;?%@@8: 8 ; =:; ?;;%B=8> =<9 <9%G9 ?%9 @8@G <>;=LC E<9 %=><%?;:FC ; %B%8G9 L;< <=: ?;B ;;=9 E?8 ?<: ;<$?; 8G9 C $8=$;<;: 9 8=;9 <=:<:<BB; 9 G=:;F<9H; 9 8>> G% <99<$;:<<98 ; => ;9 %A< ? ;; ?8G9<=:8> ?;% F G;<:A; 9< %;9 # 8 ?; $<@% < ?%9 @;9 %;=$;E<9 :%>>G9;:= 8 ?;@ 8A%=$;9 <=:$% %;9 8> ?; <9 <=:? ;9@8 %A;:%9 %=$ %8=8> E8 $8 8G 9 @ 8:G$;: E8 8=B <=:% ;$8=$% ;<F ;><$ %8=9 E?%$?9?88H ?;>8G=:< %8=98><%>;$F ;B8A; = ;= 1# ?;@8@G <:%99;=9%8=9>8G=:;: @= ?; 89 9; %8G9 %= ;;9 8 ?8 C @ ;;=$;?<A;9$< $;C J%%< ;: ?; 8F9 %=<$C 8> ?%9 E<= 8= :%9$: E?%$?= %=A<:;: ?;@;<$;8>>< % %;9:%A%:;:> %;=:9 <=:F 8 ?;9 <=:; @ ;: ?;>; <;9;M ?8GB?9;:8 9;;=%= ?;$% $G9 8 ;9@8G9;: ?;%=$ %=<%8=9 8> ?;% 8A;9 8 8 $8= <:%$?;E<9 ?;9 8> ?;% ?G9F<=:9 A;C <E ;% ?;?G <=8:%A%=;E<9 < @;:= G=:;>88 <=:<9 8=B <9 ?;@< C E<9 9G$$;99>G %9 :;G:;:,>@ 8 ;9<@@;< ;: < ;99 8>@ %A< ;:%9 ;99 8 @GF %$ $< <% G C ?;%$;=$;E% ?8G ?;>;:8 8>:; 8$ <$C E<9 ;A%A;:< = %8$?<=: 8=9 <= %=8@ ;<=: ?;9G@@8 8>< ><$ %8= F;N $< ;=;$;99< C 8 ;A;C $<=:%:<;>8 $%A% 8 ;$$;9%<9 %$<?8=8G 9 9;$;< <$? ;=8 8 ?;>< %C 8 9;$ 8> =<9 <9%G9 E<9 % @G ;:8 ?;B ;;=9 ?;F G;9 E;;L;<8G9 C ::A8 ;: 8

M0 %% +640&3- +!*+*6- ,% 6,*- *&1%+596- 0 *1 "# + J (0% >!**(0 ++#((*#+ #+ -1#6 - *-(#&: #'' (0% C%&3 +-J +, "%3 + ,1 !** ^ %% 44%+,*> w

&1%""*+ *+ 0& 4 4 . @7 /G) *+-(% ,#(' (0% !6"2 & $#&, J 0% ()-%-' (0% 3#&% >F6*-*(% (%&3- #'' ! +, (%&#+*6-'^ /G # / á *-- (*-'*%,' (0 ((0% 9"6%- $%&% #&(0#,#> J 96(*"%3 +(' *- +2&: ((0% -64K 4#-*(*#+ +,Q$*" +#("#$ +:3 &F&- 3 '4" :0#6-%^ *-(',%- 34 (# !*54)

5 % % &#1#4*6- 5&-"C 3 * % D. F ,%-1&*9*+2 (0% !*1% #'' (0% 1(*#+- +, #'' (0% 2#!%&+3 5((0% ! *-+#(" #&% !#6& 9"% (0 + (0% 0*-(#&* +

#5 E<$C [# < 11 1 [%E L; [/1.1 @ 8A;9

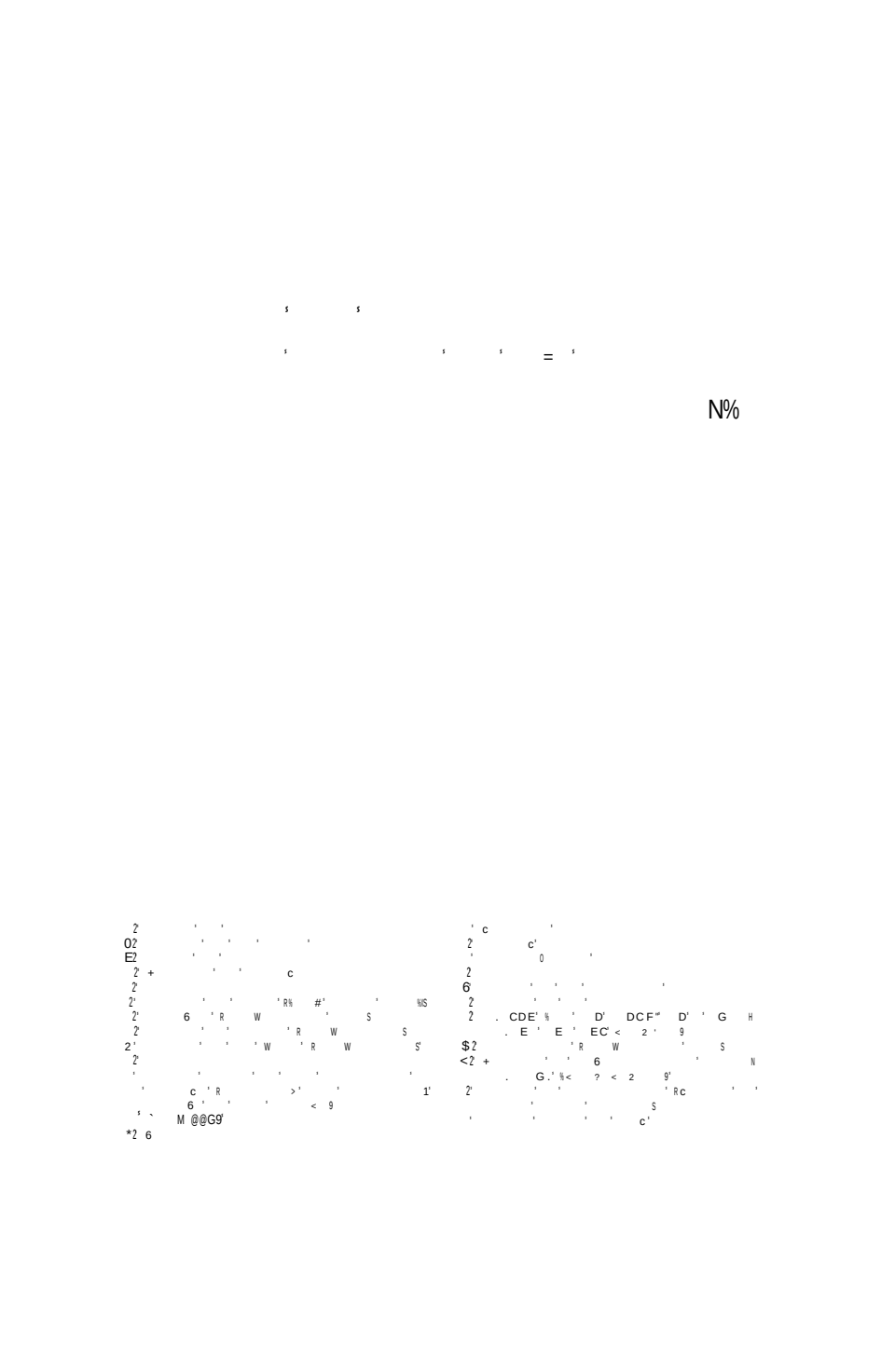
@G=%9?' ?;' $ % ;9' <=:' 8' F <A;' ?;' ;9;= ;= ' 8>' ?;' F G;9' F;;< ;' %;' A%$ % 9' 8>' ?;%' %=:%9$;;' L;< 0' <' @ 9;>;$' 8>' 8=N 9 <= %=8@ ;'> ;:' >8 ' ;>GB;' 8' ?;' ?8 C' 9;@G $? ;' <' $8G=' 8>' ?;' <9' E<9' %B=8 %=%8G9 C' E?%@@;:' <=:' <' B8A; =8' 8>' % %$%<' E<9 ?<=B;:' FC' ?;' 8 :;' 8>' ?;8:8 <' 8=' ?;' 8 F' 8>' E8' <99<99%=9' E?8 ' ?;' ?<:' $8=:; =;:' >8 ' ?;' G :;' 8>' ?%9' B 88 ' <=:' <' :< %=B' < <$H' G@8=' ?%9' 8E=' %>; 11' =' <9@% %=B' $<=:%:< ;' <C' F;' ; @ ;:' 8' FG% :' ?%9' B ;< =;99' 8=' ?;' @GF %$' $8=>G9%J@' FG ' % ' %9' ?;' %= ;9 ' <9' E ;' <9' ?;' :G C' 8>' <' 98A; ;%B=' 8' <%= <%=' ?;' <G ?8 % C' 8>' ?;' <E9' ?;' >% 9 ' ;:%$ ' 8>' WG9 %=%<=' E?%$?' E<9 8> ;=' ;@;<=:' 98 ; % ;9' ;M;$G ;:' <==8G=$;:' ?%9' >% ' ;98 G %8=' 8' 9G@@8 ' ?;' %==8$;=' <=:' 8' $?<9 %9;' ?;' BG% C' 8>' ; ; C' :;=8 %=< %8=' <=:' " 1' ; ' ?;' F< <=$;' 8>' IG9 %$;' E<9 9 % ' %=$ %=;:' %=' ><A8G '8>' ?;' F G;' ><$ %8=' FC' ?;' 9;$;' <>;$ %8=' ?;' ?<F% 9' <=:' ?;' >;< 9' 8>' ?;' ;@; 8 0' ?%9' ;JG% C' <> ;' <=' <@@< ;=' 9 GBB ;' 9GF % ;:' E% ?8G' #G$ <=$;' 8' ?;' % N @ <$<F ;' @<99%8=9' 8>' ?;8:8 <' <=:' ?;' ;@ ;99' =;A;' >8 B8 '8' >8 B<A;' ?;' %=IG %;9' 8>' ?;' $8 ;:%<=' ?;' <$$;99%8=' 8>' ?;' C8G=B;' WG9 %=' ?;' @ 8$ < < %8=' 8>' ;JG<' <=:' %B8 8G9' IG9 %$;' %=:% ;$ C' $8=:; =;:' ?;' @< %< % C' 8>' ?;' >8 ; ;%B=' 5 ;' ET' W%W9 %=%<=' %9' =8' 8 ;' 3 C;' B ;;=9' ?;' %9' 9 % ' < %A;' ZU

' 9;:% %8=' E?%$?' < 89 ' <%:' 8=9 <= %=8@ ;' %=' <9?;9' E<9 ;M$% ;:' FC' ?;' G G<' ?< ;:' <=:' 8 ;=< C' ;$8=$% %< %8='8>' ?;' E8' >;;%8=9' =' ?;' >% ?' C;<' 8>' ?%9' ;%B=' WG9 %=%<=' ,$; ;F < ;:' ?;' >;9 %A<' 8>' ?;' %:;9' 8>' W<=G< C0 ?;' B< ;9' E; ;' %=$;99<= C' :%9 G F;:' FC' ?;' $ < 8 8G9' :%9$8= ;=' -' ?;' B ;;=90' % ' ?;' E;= C09;$8=:' <$;' ?;' ; @; 8' <%= <%=;:' ?%9' 9% ;=' B <A% C0' <' ;=B ?' C%; :%=B' 8' ?%9' % @< %;=$;' ?;' $8=:;9$;=:;:' 8' ?8 :' %=' <F G@' 9;= ;=$;9' <=:' FC' ?;' A8%$;' 8>' <' $ C; ' ?;' 89' 9%=BG <' :%< 8BG;' ?<' ;A;' @<99;:' F; E;;=' <' @ %=$;' <=:' ?%9' 9GFI;$ 9' ?;%' >% 9' $8 @ <%= 9' E;' ;' ;9@;$ >G' <=:' 8:;9 0' ?;C' <$$G9;:' ?;' 9GF8 :%=<;' %=%9 ;9' 8>'8@@ ;99%8=' <=:' @ 8N $ <% ;:' ?;%' E%9?;9'>8 ' ?;' 8=B' %>;' <=:' A %$ 8# 8>' ?;' ; @; 8

?0 0%' ,#69('6" 1&%,*(' #'' &#1#4*6-' ^ +%1,#('1' @R' *-' -644#&(%,' 9)" (0%' "%-' 4 &(*' " ! 2&*6-' $0#' #+'*&3-'(0%' '%%(' +,' -4%1*'*%-'(0%' + 3%-' '**%' (& 2*1' '(%' #'' (0%' 4& -'%1(' #'' #+-(+(*+#4'%' *-' &%" (%,' 9:' #0+' " " ' ^(#3' **' ' ' (4')1-\$'

? 0VE% #0+' " " ' ^(3' **' ' 1) !' ' .5DD%] :%(' 0%' #$+-' (0 (' 6-(*+* +' $ -' ((10%,' (#' (0%' 9"6%-' 0%' -%% 3*+2' ,*-1#&,' #'' (0%' %3 4%&#& +,' 0%(>"#& ' *-' 4%&0 4-' ! *% 5' $*(0' (#4' 3 6,(' *% "#(:' +,' &%'*+% 3%+(' 9:' &#1#4*6-' ^ +%1, ('%' #' %%' '%3 +' &-%' (' 4' -

' 0*-',* "#26%' $0*10' 0540 4%-'0 -'4&%-%&!%,' %>0*9*(-'(0%' 4#46" &" +26 2%' -' $%"" -' (0%' 3 ++%&-' 4 '' #+-(+(*+M6V % *+' %' !*(0' 1%+(6&:' (*%*&' MZ(%%&' *-' 3*+2"%,' &(9' 3 +:' -(& +2%' <=:' 9 &9 &#6-' $#&,-' '#&' $0*10' 561 +2%' 1 ++ (' "$:-''*+,' ' 3% +*+2' 8 ';C 8 8BC



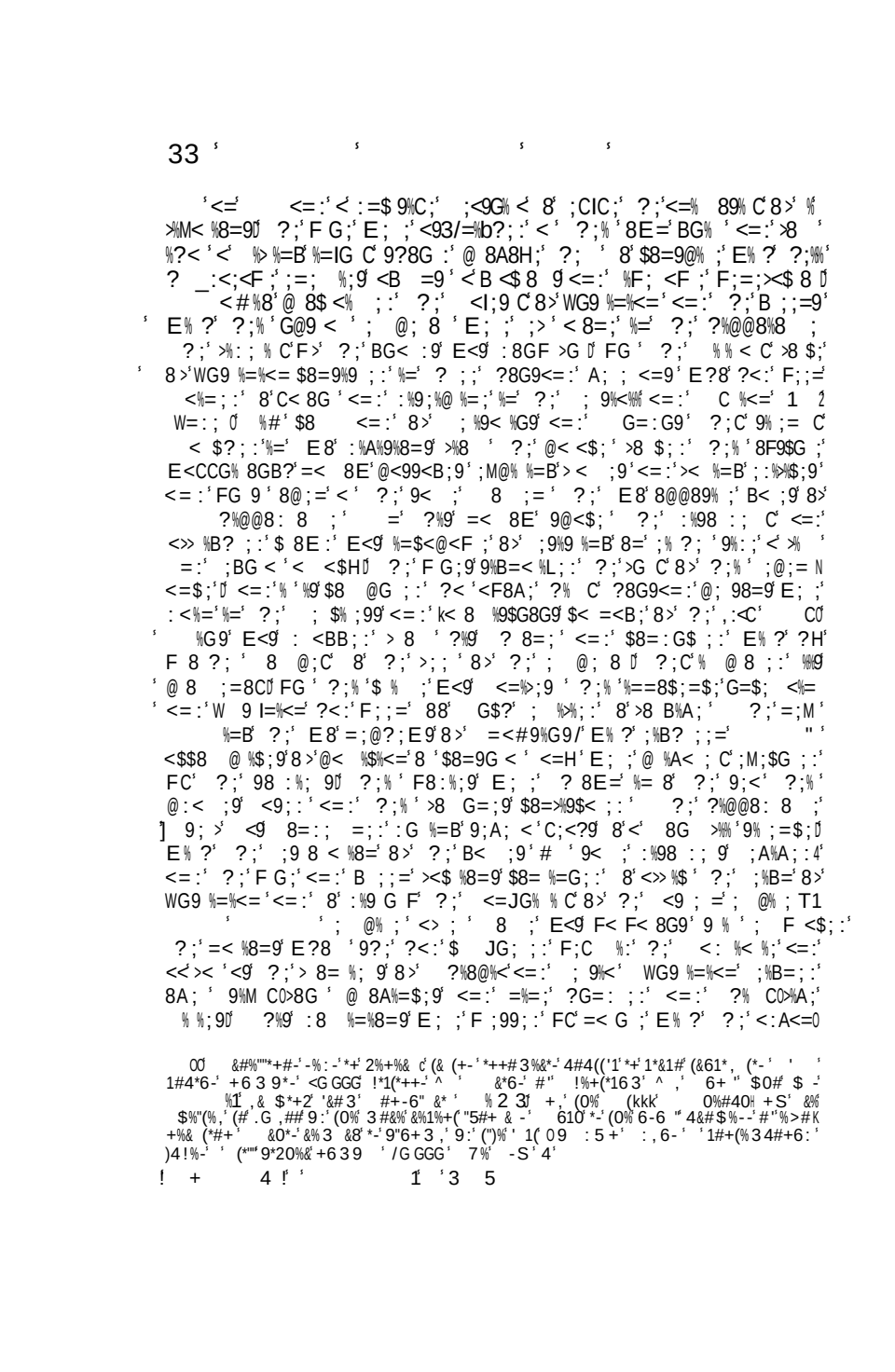
5 ;' @< %;='<=:'< ;=%A;'C;'%=98;='<% ; 9ZU' ;M$<% ;:'
WG9%=%<=D 5F;' G;'C;'W;E9' < <%<=9'<=:' <=%$?<9<=9'ZK1
?;'B ;;=9'9%'< ; @ ;:' 8'0<E<H;=' ?%9' $8 @<99%8='5' ;'
<;'@88 'E;'<;'%==8$;='E;'<;'%=IG ;:'E;':<;'=8'@<99'
?8GB?' ?;'9 ;; 9F <'B;=;<'@; 9;$G %8='%9';M; $%9;:'<B<%=9'
8G'=< ;'<=:'$8 8G' ; 'G9':%;' ' ; @; 8 ZFG' ;'G9':%;'FC'
C8G'$8 <=:'<=:'>8'C8G'9; A%$;'ZU' X G' ?;' ;@; %%8=' 8>'
@< %<'<=:'@<99%8=<;' %=A;$%A;9' :;B<:;:'%=' ?;%' ;C;9' ?;'
<I;9C'8>'?;'@G @;'D ?;C' ;=8G=$;:'<;B%<=$;' 8' ?;'@ %=$;'
E?8' ;>G9;:'IG9 %$;' 8' ?%9' @;8@ ;D <=;:' ?<' ?;'><?;'8>''
WG9%=%<='?<:'F;;='F8 D <=:'F <=:;:' ?%9' 98='E% ?' ?;' 8@@ 80'
F %8G9'=< ;9'8>'<=' ?8 %$%:;' <=' <99#% <=:'<'@; IG ;:' C <=
Q' @'C8G':;9@%9;'C8G'%A;9'^U' $ %;:' ?;'%=:%B=<='8=< $?'P ?;'
FG;9' 89;'E% ?' >%% C' > 8 ' ?;%' 9;< 9D ?;%' ?89 %;' $< 8G 9'
?G=:;:'%=' ?;'?%@@8: 8 ;'D <=:' ?;%'<:A; 9< %;9':;9; %=B'
?;'G=;JG<'$8= ;9' 9@ ;<:' ; 8' <=:' :;9@<%' ? 8GB?' ?;'
9 ;;9'8>' 8=9 <= %=8@;' ' ?%9' :<=B; 8G9' 8 ;=' 9;A;='
=8 8 %8G9'<99<99%=9'8>'F8?' ><$ %8=9' E?8' ?<:'F;;='$8=:; =;:'
FC' ?;'@ <;>;$' E; ;'$< %;:' 8G=:' ?;'$% C' <=:'<> ; E< :9'
<=9@8 ;:' 8' ?;'@ <$;' 8>';M;$G %8=' %=' ?;' 9GFG F' 8>' ; <'
8G' E; ;' % ;:%< ; C' F;?;<:;:D <' >%> ?' E<9'?<=B;:D FG'
E?;=' ?;'9< ;'@G=%9? ;='E<9'%=> %$;:'8=' ?;' ; <%=%=B' E8'
?;' 8@;' F 8H;' ?;C' >; ' < %A;' 8' ?;'B 8G=:' ?;'$ B 8G=:' ?;'@8@G <$;'
<@@ <G:;:' ?;%' ;9$<@;' <=:' ?;' 8=H9' 8>' ' 8=8=''%99G%=B'
>8 ' ?;'=;%B?F8G %=B'$8=A;=' $8=A;C;:' ?; '%='<'F8<' 8' ?;'
9<=$ G<C'8>'?;'$?G $?##' 9'8=;'8>'?;9;'$ % %=<9'E<9'8>'?;'
FG;'<=:' ?;'8?;'8>'?;'B ;;='%A; C' ?;' E8'><$ %8=9'E; ;'
;JG<C'@ 8A8H;:'FC' ?;'$ G; C'8>' ?;%' 8@@ ;998 '8' ?;'%=N
B<%G:;'8>'?;%'@< 8='D <=:'<'9?8 ' G$;'E<9'$8=$ G:;:' % '
?;C'?<:' :;%A; ;:' ?;%'@ %98=;' 9' <=:'9<%9%;:' ?;%' ;A;=B;'
?;'@<<$;'8>' ?;'@ ;>;$ 'E?8'E% ?9 88:' ?;'9;:%%8G9' 8 ;='
E<9'%=9 <= C'FG = '?%9'8>%$; 9' <=:'BG< :9'E; ;' <99<$;:' ?;'
@ %98=9'E; ;'>8 $;:'8@;='<=:'> ;;:8 'E<9' ;9 8 ;:' 8' ?89;'E?8'
$8G :'8=C'G9;'%'>8 ' ?;'@GF %$' :;9 G$ %8=' ' %%<C'>8 $;'
E?%$?'?<:'F;;=:%9@< $?;:' 8' ?;'<%:'8>' ?;'$%A%' <B%9 <;'E<9'
>%; $; C';=$8G= ;;:'FC'<=' < ;:' G %G:;'E?89;'=G F; 9'<=:'
F8:=;99' $8= %=G< C' %=$;<9;:D <=:' ?;' ; G ' ?;' E%:;9

'*#:Q 4#^ 0&#+' -10'4' D.'*R' '3:-(%&*#6-' $#&(*''#&' $0*-'#7 61 +2%'
4&#4#-%,':' 4%^--cR' +,' ' 10*(**,(' -(*""' 3#&%'*34&#9 9":' #+)%1(6&%,' H'
#&&64(*#+'#'' (*+' !E'^+#+-%+-%cR b

S2 %%'(0*-'106&10' +,'3#+ -(%&:'*+' 7 61 +2%' ' ' 0&*-(* + ' 3' *!' 4' D'
_ 0% 3#+8-'(###8'(' %3'+#(' (#(0%106&10'#'' (' #+ +'96(('(#(0 ('#'' 0' 6&%+(*6-'
H'0*10'0 ,'(0%4&!*"%2%#'' -:"6 3 b

33,

% ?' < 9' <=:' 8=;C' FC' C@< %<9' <=:' 8 @ C' E8' @< %$%<=9' E?8' $8G :' =;% ?; ' >8 B; ' E% ?' ?8=8G ' =8 ' ; ; F; ' E% ?' 9<>; C' ?< ' ?;C' E ; ;' ?;' ? @?;E9'8>' ?;' ;%=@; 8 ' =<9 <9%=;' <@ %$%8G9 C' G9 ; : ' :%9B <$; : ' <=:' @< :8=; : ' FC' ?;' I;< 8G9' ;A% C' 8>' ?;' 8=< $?' ?;C' ?<:' <@@;< ; :' <9' 8C<' 9; A<= 9' F;>8 ;' ?;' ? 8=;D <=: ' :G %=B' >%A;' :<C9' 8>' ?;' G G ' ?;C' E ; ;' : ; <%=; :' <9' % @8 <= ' ?89 <B;9D' % ' < ' ;=B ?' ?;' >;< 9' 8>' WG9 %=%<=' @ ;A<% %=B' 8A; ' ?%9' @ G : ;=$; ' ?;' A%;E ; :' ?;' E8' F 8 ?; 9' %=' ?;' %B? ' 8>' 9@%;9' @ ; ?<@9' 8>' <99<99%=9' <=: ' 9 ; = C' $8 <=: ; :' ?; ' 8' : ;@< ' > 8 ' ?;' @< <$; ' ; '<' > G% #' ;@ ;9;= < %8=' ?< ' 8F; : %;=$;' %B? ' ;<:' 8' %=A8 G= < C' ;<98=' ?;C' ; % ; :' 8' ?;% ' ?8G9;9' <=:' %=' ?;' 8 =%=B' 8>' ?;' 9%M ?' :<C' C@< %G9' E<9' 9G 8G=:;:' <=:' 9;%L;:' FC' ?;' @;8@ ;' E?8' ;;' B< : ;99' 8>' ?%9' A% G8G9' ;9%9 <=$;' <=:' ?;' ;< 9' 8>' ?%9' E%>;'' <=9@8 ;:' ?;% ' ><A8% % ;' 8' ?;' >8 G ' 8>' 8=9 <= %=;' <=: ' %=9 ;<:' 8>' <' :%<:; ' @ <$;:' <' %$?' $8 < ' 8=' ?%9' ?;<: ' >' ?;' G9G @; ' E?8' <> ; E< :9' @ ;<:;:' ?;' ; % ' 8>' ?%9' :; <C' ?<:' $8 @ %;:' E% ?' ?;' <:A%$;' 8>' ?%9' 9;=< ;' <=:' G B;:' ?;' >G C' 8>' ?;' G % G:;' ?;% ' >% 9 ' % ;9%9 %F ;' ;>>8 ' %B? ' ?<A;' 8@@ ;99;:' 8 ' ;M@; ;:' ?%9' ; F %=B' $8 @; % 8 ' ?;' CL<= %=;' @< <$;' ;=I8C;:' <' > ;;' $8 %$< %8=' E% ?' ?;' 9;<' D A;99; 9' <C' ;<:C' < ' ?;' B< :;=09 <% 9D <=:' <' 9;$;' ;98 G %8=' E<9' < ;<:C' >8 ;:' 8' $8=A;C' ?;' ; @; 8 ' E% ?' ?%9' >< % C' <=:' ;<9G ;9' 8' <' 9<>;' ; ;< ' < ' 98 ;' :%9 <=$;' > 8 ' ?;' $<@% < WG9 %=%<=' E<9' 89 ' %>' ?;' @ 89 % G ;' E?8 ' ?;' <%9;:' > 8 ' ?;< ;' ?<:' =8 ' ;=8G=$;:' ?;' % %:% C' <9' E ; ' <9' ?;' A% G;9' 8>' ?;' 9;M' =' ?;' %:9' 8>' <' $8G=$% ' E?; ;' ;%9< %G9' E<9' @ ;9;= ' ?;8:8 <' < 8=;' :%9@ <C;:' ?;' 9@% % ' 8>' <=' ?; 8D <=:' 9?;' < 8=;' E% ?8G ' <@@ ;?;=:%=B' ?%9' >G G ;' ?< ;:' $8G :' 9<A;' ?;' : <@; 8 ' > 8 ' ?;' % %=;=' :<=B; ' <=:' ?%9' G=E8 ?C' >;< 9' >' %B? Q' 9<%:' ?;' $8=98 ' 8>' WG9 %=%<=' 5 E ; ;' ?;' 8= C' ;<=9' 8>' 9<>; C' C; ' 9?8G :' :%9:<%=' 8' > C' ;< ?' %9' ?;' $8=:% %8=' 8>' 8%G^ F% ?D FG ' ?;C' E?8' ?<A;' ;%B=;:' 9?8G :' =;A; ' 9G A%A;' ?;' 899' 8>' :%B=% C' <=:' :8 %=%8=' ' % @ 8 ;' ?;<A;=' ?<' ' <C' @;A; ' F;' 9;;=' =8 ' <' :<C' E% ?8G ' C' :%<:; ' <=:' @G @ ;D ?<' W <C' =8' 8=B; ' F;?8 :' ?;' %B? ' E?;=' $;<9;' 8' F;' 9< G ;:' E% ?' ?;' =< ;' 8>' JG;;=' >' C8G' ;98 A;' ' <;9<'Z 8' > C' C8G' ?<A;' ;<9G ;9D F;?8 :' ?;' 9;<' C8G' ?<A;' 9?%@9F G ' ; F ;' ;9 ' ?;' :;9% ;' 8>' %>;' 9?8G :' ;M@89;' C8G' 8' E ; $?;:' ;M% ;' <=:' %B=8 %=%8G9' :;< ?' 8 ' C' 8E=' @< ' <:?; ;' 8' ?;' <M% ' 8 ' <> %JG% C' ?<' ?;' ? 8=;' %9' <' B 8 %8G9' 9;@G $? ;U' ?;' >% =;99' 8>' <' E8 <=' ;9 8 ;:' ?;' $8G <B;' ' :;%F; < ;' <=:' <$ ' <=:' $8G <B;' 988=' :%9$8A; 9' ?;' ;98G $;9' 8>' ?;' 89 ' :;9@; < ;' 9% G< %8=' ' . 0! .!' ' !



<B;9ʻ 8>ʻ 98% ʻ 9% G< %8=ʻ <=:ʻ $ % < ;D <=:ʻ ?;ʻ % @ 8A; ;@ 9ʻ 8>ʻ ?G <=ʻ< ʻ ?<:ʻF;;=ʻ@; @; G< Cʻ :%>G9;:ʻ< @=#ʻ ?;ʻ$8<9ʻ 8>ʻ ?;ʻ ;:% ; <=;<=ʻ<=:ʻ ?;ʻF<=H9ʻ8>ʻ ?;ʻ % ;ʻ> 8 ʻ<=$%;=ʻ 8Cʻ 8ʻ ?;ʻ BC@ %<=ʻ ?;F;9ʻ F <?< TTʻ ?<:ʻF;;=ʻ ;%;A;:ʻ FCʻ ?;ʻ E; 0H=8E=ʻ @ ;= Cʻ 8>ʻ BC@ D ?;ʻ 9< ;ʻ $8G= Cʻ<ʻ 9 <ʻ<=:ʻ @8@G 8G9ʻ <$ ʻ E<9ʻ 9 % ʻ $<@<F ;ʻ 8>ʻ ; @8 %=B ;<J?ʻ C;<ʻ E8ʻ ?G=: ;:ʻ <=:ʻ 9%M Cʻ ?8G9<=:ʻ JG< ; 9ʻ 8>ʻ E?;<ʻ >8 ʻ ?;ʻ G9;ʻ 8>ʻ 8=9 <= %=8@ ;D <=:ʻ ?;ʻ$<@% <ʻ 8>ʻW9 %=%<=ʻE<9ʻ9G@@ %;:ʻE% ?ʻ ?;ʻ <=G><$ G ;9ʻ8>ʻ %:8=ʻ>%> ;;=ʻ$;= G %;9ʻ<> ;ʻ ?;Cʻ?<:ʻF;;=ʻ $; ;F < ;:ʻ %=ʻ ?;ʻ @8; 9ʻ 8>ʻ 8 ; T1ʻ ?;ʻ <==G< @8E; 9ʻ 8>ʻ A;B; < %8=ʻ%=9 ;<:ʻ8>ʻF;%=B ;M?<G9 ;:ʻFCʻ E8ʻ ?8G9<=:ʻ?< A;9 9ʻ E; ; ;=;E;:ʻ<=:ʻ%=A%B8 < ;:ʻFCʻ9H% >G ʻ?G9F<=: Cʻ %$?ʻ <=G ;ʻ <=:ʻ 9;<98=<F ;ʻ ;@89;ʻ ?;ʻF ;;:ʻ8>ʻ:8 ;9 %$ʻ <=% <9ʻE<9ʻ%=N >%=% ; Cʻ G %@ %;:ʻ <= < %8=9ʻFG% :%=B9ʻ<=:ʻ ?;ʻ%=9 G ;= 9D 8>ʻ <F8G ʻ <=:ʻ GMG Cʻ E?%$?ʻ < ;ʻ 8 ;ʻ :G <F ;ʻ ?<=ʻ ?;ʻ ; ʻ 8>ʻ ?G <=ʻ %>;ʻE; ;ʻ <$$G G < ;:ʻFCʻ ?;ʻ $< ;ʻ8>ʻ9G$$;99%A;ʻB;=; <N %8=9ʻ <:% %8=ʻ@ ;9; A;:ʻ<=:ʻ;M@; %;=$;ʻ9% @ %>%;:ʻ ?;ʻ?G F ;ʻ @ <$ %$;ʻ 8>ʻ ?;ʻ < 9D 98$%; Cʻ E<9ʻ ;= %$?;:ʻFCʻ ?;ʻ :%A%9%8=ʻ 8>ʻ <F8G ʻ <=:ʻ ?;ʻ ><$% % Cʻ 8>ʻ ;M$?<=B;D <=:ʻ ;A; Cʻ 8 <=ʻ E<9ʻ 8:B;:ʻ $ 8 ?;:ʻ <=:ʻ 9GF9%9 ;:ʻ FCʻ ?;ʻ %=:G9 Cʻ 8>ʻ<ʻ ?8G9<=:ʻ ?<=:9ʻ ?;ʻ%=A;= %8=ʻ8>ʻ ?;ʻ 88 ʻ<=:ʻ :%9 <>ʻ?<9ʻF;;=ʻ@%8G9 Cʻ <9$ %F;:ʻ 8ʻ ?;ʻB8:9ʻ =ʻ ;A; Cʻ <B;ʻ <ʻ A< %; Cʻ 8>ʻ <=% <ʻ <=:ʻ A;B; <F ;ʻ@ 8:G$ %8=9ʻ?<% ʻ9H%=9ʻE88 ʻ> <M ʻ$8 8=ʻ<=:ʻ<ʻ ;=B ?ʻ ʻ ?<A;ʻF;;=ʻ9H% >G Cʻ <=G><$ G ;:ʻ 8ʻ?%:;ʻ8ʻ<:8 =ʻ ?;ʻ?G <=ʻ F8:CD ?;Cʻ E; ;ʻ 9 <%=;:ʻ E% ?ʻ <=ʻ%=>G9%8=ʻ8>ʻ@; <=;=ʻ$8 8G 9ʻD <=:ʻ ?;ʻ@;=$%ʻE<9ʻ9G$$;99>G Cʻ ; @ 8C;:ʻ 8ʻ % @ 8A;ʻ ?;ʻ <F8G 9ʻ 8>ʻ ?;ʻ 88 ʻ =ʻ ?;ʻ$?8%$;ʻ8>ʻ ?89;ʻ$8 8G 9ʻT/ E?%$?ʻ % % <;ʻ ?;ʻ F;<G %;9ʻ8>ʻ=< G ;ʻ ?;ʻ> ;;:8 ʻ8>ʻ <9 ;ʻ<=:ʻ><9?%8=ʻE<9ʻ%=:G B;:ʻD

P; %%ʻ (0%ʻ 9##8ʻ #'' C%+%-*-ʻ ^>**ʻ GRʻ +,ʻ (0%ʻ ,3*+*-(& (*#+ʻ #'' #-%40ʻ 0%ʻ ++ "-ʻ#" (0% C&%%8-ʻ +,ʻ %9&%$-ʻ 2&%%ʻ*+ʻ (0%% &":ʻ &(-ʻ +,ʻ4"%+(:ʻ#'' 2:4(J 96((0*-ʻ +(*F6*(:ʻ -644#-%-ʻ ʻ "#+2ʻ -%&*%-ʻ #'' *3 4&#!%3%+(-Jʻ +,ʻ &96&(#+ʻ $0# *-ʻ "3#-(-(*"%,ʻ 9:ʻ (0% %9&%$ʻ 1 ""-ʻ "#6,ʻ '#&ʻ (0% 3 &*(+ʻ 10&#+#"#2:ʻ^7*!*+%% 2 (*#+ʻ !#"ʻ***ʻ 4ʻ D ʻE1R

*"*20(3*""*#+-ʻ#'' #3 +ʻ 3#,**ʻ 9%-*,%-ʻ ʻ1#+(&*96(*#+ʻ#'' #1## 6&%*ʻ '#&ʻ(0%ʻ %>4%+-%-ʻ #"ʻ $ (%& 1 &&* 2%ʻ'&#3ʻ $0*10ʻ (0%ʻ-69)%1($ -ʻ 2& 1*#6-":ʻ%>16-%,ʻ %%ʻ (0%ʻ>***(0 ,*1(#'' 6-(*+* +ʻJ (0%+6 3 9%&-ʻ &%ʻ10%18%,ʻ +,ʻ!%&*'*%,'9:ʻ(0%ʻ 2&%% 3%+(#'' (0%ʻC&%%8ʻ +,ʻ (*+ʻ(%>(-

0 #3%&!-')"* ,ʻ !*ʻD ʻ 0%-%ʻ!%*"-ʻ !*%$ #($ *)&!(>(#*ʻ$%&%ʻ(0%ʻ$#&8ʻ#'' (0%ʻ *,#+* +ʻ$#3%+ʻ 6((0*-ʻ4 -- 2%ʻ*-ʻ3#&%ʻ0#+#6& 9"%ʻ (# (0% 3 +6' 1(6&%-ʻ (0 +ʻ (#ʻ(0%ʻ + !*2 (*#+ʻ#'' 0#%+*1*ʻ''&#3ʻ $0%+1%ʻ(0%:ʻ0 ,ʻ9%%+ʻ*34#&(,ʻ(# &#:*+ʻ 0&:2* +ʻ9#((#3-

0S %%ʻ*+ʻ !*,ʻ^,%ʻ &(%ʻ 3 +,*ʻ***ʻD ʻE1ʻ ʻ4#%(*1 '"*-(#''($%"!%ʻ1#"#6&-ʻ 9#&&#$%,ʻ'&#3ʻ'"#$%&-ʻ(0%%3%+(-ʻE1ʻ 6(*(*-ʻ "3#-(*34#--*9"% (# ,*-1&*3*K + (%9:ʻ$#&,-ʻ "" (0%+*1% +,ʻ! &*#6-ʻ-0 ,%-ʻ9#(0ʻ#'' &(2+,ʻ+ (6&%

FG ? ; @<%# ; E?%$? ? ; G&; %V/<=(;M <<$;$ > 8 <
9?; 0>%9? <9 ;9> ;%=; : 8 ?;9<V ; : @; <= :@< <$;8> ?;
; <@8E<a <= : ?; @;=< %;9 8> ;<98= E ; ; : ;=8G=$; : <B<%=9
?;< F% %8G9G9GFI;$ 9 E?8 :< ; : 8G9G @ ?;@ ; 8B< %A;8> ?;
? 8=; 1
3 =; ; : =8 ;M@ <%= ?< . %9 8 %B%=< C 9@G= > 8 ?;
F8E ; 9 8> < $< ; @% < <= : ?< $8 @89;9 ?; B8 : ;= 8 F
> 8 E?;=$; <E8 ; ; B;9 %= ?; >@ 8> <FG ; > C %
?; ;%B= 8>WG9 %=%<= ?;9% H0E8 9 E?8 >; ; : 8= ?; ;<A;9 8>
?; E?% ; G?; C0 ; ;E ; ; $8=>%=; : 8 ?%=<0 ?89; 8> ?;
@%=; ?;8<H <= : ?; <9? E ; ; $8 8= %= ?; >8 ;9 9 F8 ? 8>
9%< <= : G 8@;Q FG <9 ?; % ; :G$< %8= %9 8 ; : %>%$G <= :
?; % @ 8 :G$; 8 ; G=$; <%= ?;C E ; B;=; < C =;B ;$; :
;M$; @ %= ?; % ;%9 <= :8> ;89 =; < ?; $8<9 8> %$<
?%= B<GL; E<9 @ 8$G ; : > 8 ?; % E ;F9 <= : ?%9 ;<= <=G0
>%%$ G ; ?; %=A;= %8= 8> <E8 <= >8 >; < ; G9; E<9 8=B<
<: % : F8 ? %= ?; <9 <= : < 8 ; ?< ;A; 9G9@%$%8=9
<C F; <%9; : FC ?; B< ;= 9 8> ?; ; : ;9 <= : 99C %<=9
% B% %9 ?; 89 <=$%;= E % ; E?8 ;M@ ;99 C ;= %8=9 ?;
98> 88 E?%$? E<9 $8 F; : > 8 ?; ; ;9 8> ?; ; ;9 8

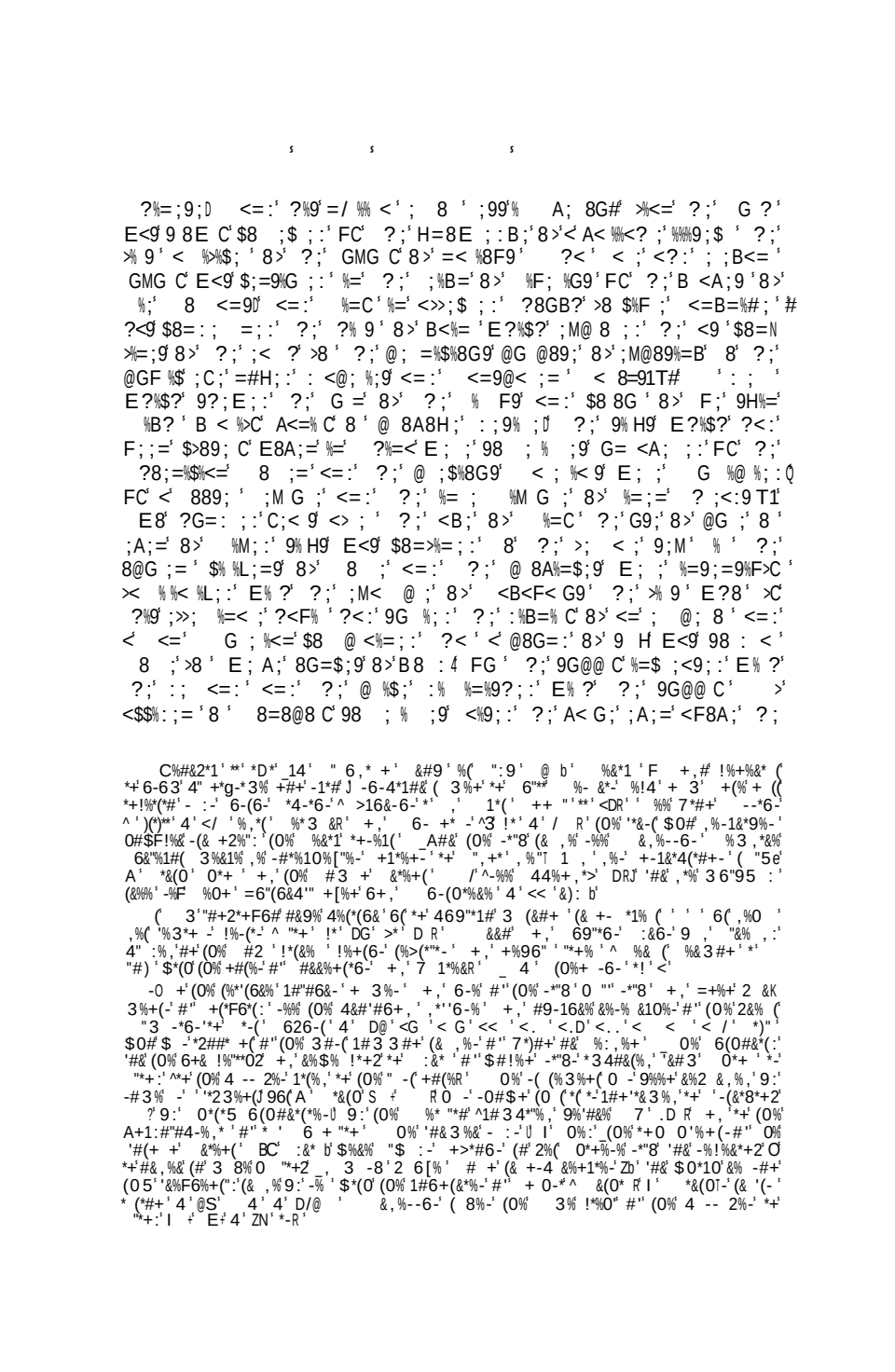
: (0% ,*-1#!%&: I 110*#% " E1 $% & -6&4 -- (0% 1#"#6&- # +(*F6*(:
0%*& &#: " 46&4"% 3 , -(&#+2 - 3 %"" + , &8 1 ,-(- ,%%4 - 96""- 9"##, W
&W 5 6*+% 0%4&%-*,%+(
< /R $*"" 36-% +,
%-4%1* "": *+ +2" +, *- - $%""

8+#$+ - *(,%-%&!%-(# 9%

(*-(#&*1 " 4&##'-#"(0*-)% "#6-:0 !%9%%+ #11 -*#+ "":*+(&#,61%, +, 3 +:
3#&% 3*20( )& ! 9%%+ ,,%,J 96(G5 &9*(& &: 1(-#",%-4#(*-3 $%&%)6-(*"%,9:
(0% -#9%& +,2%+%& " ,%1" & (*#+-#" $ ^ #,%> 0%#,#-* + 3 > (*(* "%2 <
#,%> *6-(*+* # >* (*("%2 /R + *+2"#&*#6- 4%&3*--*#+ +, +%1%-- &: &%K
-(&*1(*#+ $ - 44"%,(# (0% ((0% &+3%, +1%&-^ #, 0%#, - 3 >! (*(@
82 R

-S + (0% 0*-(#&:#"*+-%1(-^ & 3#&% $#+,%&'6" (0 + !*,- %(3#&40#-%-R (0%
*"8 #&3 0#",- 1#+-4*16#6-4 1% 0%9#3 9:>#"(0%*-%#" %#- - ,-1&*9%,
": "*+:^ *-((6& > * D5 $*(0 (0% +#(%-#"(0%($#"% &+%, %-6*(- &
,#+*+ +, &#(*%&R 3 :9%*"6-(& (%,9: -*3*" & -4%1*%-V# 0*+ ^ 3#*&%- -6&
'%- 0*+#*-(#3 "*4 /@/ RJ 96('#6&-*"8 $#&3 - $%" -(0%$0*(%36"9%&:
'&%% $%&%6+8+#$+(# 0%#40& -(6- +, "*+: %&%(0% 6(0#& 0 - 16&#6-":
1#+'6-%, % - $*(5 #- 0%%&"*-(+#(*1%#"(0%-*"8 !'#&3*-*+ &*-(#("% *-(
+*3 "0o -1 @] , &#!&#! #5 ! , ! "#:$ (=$! #
0%%&":M 0*+5 0&#+*1"% #6 055-06 $0*10

-4 &(":$&*((%+,6&*+2(0% ("1%+(7 +,1#!%&-(0%4%&*#, + D/(#DDG
-((5'(0 (3 (-*((^(0%% -(%&+4 &(#"(0% #3 +%34*&%)# (0%4%#4"%TT4& 1(*-%
(0%4" +(*+2((%%- +,(0%&% &*+2#"-*"8 $#&3-I^ *&'0 0*+ +,(0% #3 +
&*%+(4 .GR '+ " (%$%&8(0% %* -06 1#+(%34#& &: $*(0 6-(*+* + 36"K
9%&&: (&%%-'+&% -4%1*'*1'+ '4&#>*3* $0*10'*-4%&0 4-*2+*'*1 +(P'H '&%13 3(&:
4&#,(*1%- '" 8*+,-#"2& *+(0% 36'**%&$ (&%% ,,0%34 0%'*+0 9*(+(-96-:
(0%3-%"!%-$*(0 g) 8 $#&3- +,'*%",-f'^'(0050 *



9 * =:< :8> GC; %I%%% ?; % <=G>%%$ G ; 98> C ;< =: ; C G9
; 898 ; ?=$9 $8c @; ;:FC ?;'8@; < %8=8>?;9< ;$<G9;9
8;8@ # ?;I=9; A;9 E% ?< =%= ?@< 8> ?< ; M <A<B=
<E E<9 ?8GB? =;$;99< C 8 :%9$ % %=< ;? ;: ;99
8 ;:%<=9 ?< 8>9;=< 8 9 <=:8> ?;9% H ;M@8 ;:
(S$=< % ;= <%A;$8G= C ?;(B ;< ;@< E<9 $8=9G ;:FC
%F=9%:FI;;9 8> WG9 %=%<= ?;C E; ;9 % 8 ;%= % < ;C
<$JG<%= ;:E% ?< 9?; 0>%9?8>?; ;:% ; <=;<=9G =< ;:?;
9% H0E8 8>?;9;<I ?;>%=;E88 8?<% FC E?%$?? ;8 ?; 0
8>0@;< <>>%M;9 % 9; > 8 ?;8$H %9 =8E <=G><$ G ;:>8 $G %N
89% C < ?; ?<=G ;0 <=:< 8F;8F <%=;:>8 ?;9<;9%=BG <
< ; %< 9 E<9 ?;B%> 8>?; 8 <=; @; 8 8 ?;9< <@9 8>
;=%< TKK
A< G<F ;; $?<=:%L;8>9 < FG H %9 $<@<F ;8>:;> <C%=B
%;;M@;=9;8> <=:$< %<B;0 <=:? ;$< <A<=9 <A; 9;: ?;
E?8 ;< % G:;8> 9%<%= E8?G=: ;:<=:>8 C0 ? ;;:<C9>8
?;? ?%=;9;8$;<=8 ?;9;<0$8<9 8> C %< % H E<9 % ;N
:%< ;C:;%A; ;:8 ?; 8 <=9 FC ?; ; 9%<= ; $?<= 9 TT
E?8>;JG;= ;:?;><% 9 8> ;=%<<=:%9%F%90 FG ?%9 <:;
E?%$?%= ?;% = ; A< 9 8> G$; E<9 8@@ ;99;:FC <A< %$;<=:
I;<8G9C E<9 8 G C %= ; G@ ;:FC ?; 8=B E< 9 8> ?; %A<
$ < $?%;9 ?;B ;< H%=B %B? @ 8G:C =G F; 8B:%<=<
<=:; A;= < 8=B ?;@ 8A%=$;9 8> ?%9 ; @% ;0 FG ?%9
;< :8 %=%8= E<9 F8G=:;:FC ?; MG9 <=:?%9 G9;>G %= ; N
$8G 9;E% ?? ?; 8B:8% ;9 F;C8=:? ;>%A; :;@;=:;:8=? ;
@ ;<9G ;8> ?;% $8=JG; 8 9 ?;E?% ; G=9<=:? ; G H9 E?8
9G$$;99%A; C ;%B=;:8A; ?< %=:G9 %8G9 @;8@ ; ; ?; 89
9<A<B;:8 %=%8= ?<9 =8 ;M % @< ;:? ;9;:9 8>< B %$G G ;<=:
;8 ;%;;%= < # 8=E?%$?9 $; F < ;:<9 8=;8> ?; >8G
B< :;=9 8> 9%<0 ?; $% %;9 8> < < $<=:<=: 8$?< <;<:N
A<= <B;8G9 C 9;< ;:>8 ?;;M$?<=B;8>%9 A< %8G9 @ 8:G$ %8=9 0

A" !*6- #4*-1 -* 6&%"* +1./+ *-(' 626-(4 5D. %%" "3 -*6-
,* -(' 62 4 < D +, "*+* + >%&1*((* 4 &(* " +, *4*4%&%1(& (%# ' (0% 4&*1% # " -*"8 *+
0% (*3% #" 6-(*+* +
&#1#4*6- ,% , *' 3 *** 1 0%-% &%' "#6+, +% & 3 :&+ #
4*(: C#&-8+ +, *+#&1 J +, 4 *& #" 2"#!%-#'9%*& -*"8 $ -4&%-%+(%, (#
#4% %+%, *1(" _ 0*-1"#(0 *-(0% F! $#!%+ '&# 3 (0% (0&% , -# " (0%

. &#444"6- %&-*1 3 % V 9 0 % ;D/0 C8" 1 *! $ '(2 %+ +, $ %=
0 OZ# $ *%% &, **-3 #& ; 9%<=
%34*&% -*, #&% 1" MQ &)*'(((03*Z *&(0*, - 4 @ *+ 6, -#+ %#2'34

<=:' ?;% ' ; $?<= 9' @G $?<9;:' > 8 ' ?;' ?T;9;' 11' ?;' 1<E' 8 ' <=G><$ G ;:' 9% H' E?%$?' ?;C' <=9@8 ;:' %= 8' ; 9%<' >%9 ' G9;' 8>' ?;' 8 <=' =@% ;' =' ?;' <%=' $<@% <' 8>' ?%=.' ?.' 8B:%<='$< <A<=9' E; ;' ;= ; <%=;:'<9' ?;'9G@@ %<=' ;=<F 9%;1' F>' %FG < C' H%=B:8 9'<=:' %>' ?;C' ; G =;:'%=' 9<>; C' ?;' F8 :'<:1' A;= G ;' E<9' ;E< :;:' E% ?' ;M8 F% <=' B<%=' G' ?;' :%>%$G ' <=:'@; %8G9' < $?' > 8 ' < < $<=:' 8' ?;' >% 9' 8E='8>' ?19=# $8G :'=8'F;'@; >8 ;:'%=' ;99' ?<=' 9%M C';%B? C 8'8=;'?G=: ;:' :<C9' <9' 988='<9' ?;C' ?<:' @<99;:' ?;'W<M< ;9' ?;C' <' ;' <F ' :;9; ' <=:' ?;' E<=:;%=B' ?8 :9'G= ;99' ?;C'< ;' ;9 <%=;:'FC' < %;9' <=:'B< %98=9'?<A;' < E<C9' $8=9%:; ;:' ?;' $% %L;='<=:' ?;' <A; ;'<9' ?;' 8FI;$ 9' 8>' <E>G' <@%=;' 8' ;9$<@;' ?;' < > >' 8FF;9' <=:' ?;' C <= 9' 8>' ;9%<' ?;' 9% H' $< <A<=9' ;M@ 8@;:'< ' 8 ;' 98G ?;=' 8<:' ?;C' <A; 9;:' ?;' 8G= <%=9' 8>' ?# ' :;9$;=:;:' ?;'9 ;< 9' 8>' ?;' 6<=B;9' 8 ' ?;' =:G9'<=:'@< %;= C' ;M@;$;:'%=' ?;'@8 9' 8>' 6GL; <'<=:' <<F< ' ?;' <==G<';;9' 8>' ?;' ;9 f' G' ?;' :<=B; 9' 8>' ?;' :;9; ' E; ;' >8G=:' ;99' %= 8 ; <F ;' ?<='' 8% ' ?G=B; ' <=:' ?;' 899' 8>' % ;' ' ?;' < ;=%@ ' E<9' 9; :8 ' ;=;E;:' ?<=' 8=' C' G 8@;<=' E?8' ?<9' @<99;:'% ?<'G=> ;JG;= ;:'E<C' <@@ <G:9' ?%9' 8E>' :%%B;=$;' ?<' ' %=' =%=;' 8= ?9' <> ; ' ?%9' :;@< G ;'>8 ' ;H%=' ?;' ;<$?;:' ?;' 8G ?' F>' ?;' =:G9' ?;' 8$;<=' ?8E;A; ' E<9' 8@;=' 8' ?;'> ;;' $8G% G0' =%$< %8=' 8>' <=H%=:' ' 8 ' ?;' B ;<' %A; ' 8' ?;' 8@%$' >' <=$; ' ?;'@ 8A%=$;9' 8>' ?%=<' E; ;' 9GF:G;:' <=:' $%A% %L8:' FC' ' ?;' ; @; 8 9' 8>' ?;' 8 ?' ?;C' E; ;' >% ;:'<F8G' ?;' % ;'8>' ?;' ? %9 %<=' <; <' E% ?' $% %;9' <=:' ;=' G F;% C0 ;;9' <=:' ?;%>' @ ;$%8G9' %=?<F% <= 9' ?' <=:' %>' ?;' ?%=;9;' E% ?' ?;' H=8E ;:B;' 8>' ?;' $8 @<99' ?<:' @899;99;:' ?;' B;=%G9' 8>' ?;' 6 ;;H9' 8 ' ?8;=%$%<=9' ?;C' %B? ' ?<A;' 9@ ;<:' ?;%' :%9$8A; %;9' 8A#' ?;' 98G ?;=' ?; %9@?; ;' ' < '=8' JG< %>%;:'Q 8' ;M< %=;' <=:' '<I<',=8' :%9@89;:' 8' F; %;A;' ?;%' :%9 <= ' A8C<B;9' 8' ?;' ; 9%<='B G >

"*%' 9"*+,' ,3*& (*#+'#'' (0%' %-6*(-' 1#+'#6+,-' (0%' ,*''%&5¢' 1(" (" * 0*+%-%'0*-(#&:' 0%:' 3 % 3#&%' 1&*Q*1 "":' *-(*+5*-0% ' 9:' ' ,%NM)***2Q%E' ,%-' 6+-'(#&+' 8' 4 &(' *' *+' (0%' 9"%-' 4 &(' **' *+' (0%' C52& 40:' & 1 ,53*%,%-' +-1&*4(*#+-'(#3' >>>*"' >>>!*' >"**' >"*** R' $0# ,*-1#!%&-'(0%' 4&#2&%--' #"(0% (86(0'#'' (0% ++ "-' +,' (0%' %>(%+(' #'' (0% 3#+ &10:' ('"" (0Z' (* +' & ' %' 0 -' -% &10%,' $*(0' ' 16&*#6-'%:%'(0%' 1#++%V5#+-' #" 0*'*%-'('' $*(0' (0%+ (*#+-'#'' (0% %-(J 96(' (0%-%' 1#++%>*#+-' &%'-"*20('1 -6 "' +,' +#&',*,'(0% #3 +-'%+(%&(*+' '-6-4*1*#+' (0 (' (0% %&%-'#& *+ % 4#--%--%,' 0' 4*&% +#(' *+'%&*#& (# (0%*& #$+' _ 4' 44%+,*>' D b

0%' &# ,-' '&#3' 0*+ '(#' %&-* ' +,' *+,#-(+' 3 :'9% *+!%-(*2 (%(')+' (0S' &%" (*#+-' #" 18"6:(+,' 05!%+#(' ^(0% 39 -- ,#&-'#'' 0 &#80' 6(0#4:' 8*+-#+' (0% 5%' CO*9%*0' E1 R' %%' "*8%$*-%' +$:'-' & !%"-' !# ' *' 4' <./ <-@N ' 1# 3 3 6+*1 (*#+' (0&#620' 0*9%(' 0 -' 9%%+' " (%":'%>4"#&%,' 9:' (0% = 6 2"* ' &%*2+-'#'' %+2 "

ʻ 8 ʻ % ;ʻ <@;ʻ 8>ʻ + F8 :ʻ 8@;ʻ Ɗ FG ʻ ?;% ʻ <=$;9 8 9ʻ %B? ʻ ;JG<ʻ ?;ʻ
<F8G 9ʻ <=:ʻ G$$;99ʻ 8>ʻ ?;ʻ @ ;9;= ʻ <$;ʻ <=:ʻ ?;ʻ 9@?; ;ʻ 8>ʻ ?;% ʻ
<A%B< 8@ʻ %# ʻ ;M ;=:ʻ >%#%=ʻ ?;ʻ %9 ;9ʻ 8>ʻ W<@<=ʻ 8ʻ ?;ʻ 9 <% 9ʻ
8>ʻ < <$$<ʻ ?;ʻ @% < 9ʻ%>ʻ E ;ʻ <Cʻ <@@ Cʻ ?< ʻ =< ;ʻ 8>ʻ <=ʻ %;= <ʻ
$G ;9 %ʻ % ?8G ʻ 89%=Bʻ 9%B? ʻ 8>ʻ <=:ʻ ?;ʻ Cʻ %B? ʻ 9<% ʻ < 8=Bʻ
?;ʻ $8<9 ʻ 8ʻ ?;ʻ ;M ;ʻ @ 8 8= 8 Cʻ8>ʻ $?%=ʻ E?%$?ʻ %9ʻ <==G< Cʻ
A%9% ;:ʻ FCʻ ;=ʻ ʻ E ;A;ʻ 9?%@9ʻ <:;=ʻ E% ?ʻ ?;ʻ @ 8:G$ %8=9% ?;ʻ
<=G><$ G ;9ʻ <=:ʻ ;A;=ʻ ?;ʻ < %>%$; 9ʻ 8>ʻ ?%=<ʻ Ɗ ?;ʻ %9 <=:ʻ @>ʻ 0
G < <ʻ <=:ʻ ?;ʻ 8@@89% ;ʻ @;=%=9G <ʻ < ;ʻ >;%= Cʻ :; %=;< ;:ʻ <9
?;ʻ ;B%8=9ʻ 8>ʻ B8 :ʻ <=:ʻ 9% A; Ɗ0ʻ <=:ʻ ?;ʻ <:%=Bʻ $% %;9ʻ =< ;:ʻ %=ʻ
ʻ ?;ʻ B;8B <@?Cʻ 8>ʻ 8 ; Cʻ <Cʻ %=:%$< ;ʻ ?< ʻ ?%9ʻ E;< ?ʻ E<9ʻ =8ʻ
98 ; Cʻ :; %A;:ʻ > 8 ʻ ?;ʻ %=%=;9ʻ ?;ʻ :% ;$ʻ %= ; A<ʻ F; E;:=ʻ
G < <ʻ <=:ʻ ;C 8=ʻ %9ʻ <F8G ʻ ? ;:ʻ ?G=: ;:ʻ ;<BG;9Ɗ ?;ʻ ?%=;9;ʻ
<=:ʻ =:%<=ʻ =<A%B< 8 ʻ E ;ʻ @8=:G ;:ʻ FCʻ ?;ʻ >%B? ʻ 8>ʻ F% :9ʻ <=:ʻ
@; %8:%$<ʻ E%=:9ʻ <=:ʻ ?;ʻ 8$;<=ʻ %B? ʻ F;ʻ 9;$G ;Cʻ <A; 9;:ʻ %=ʻ
9JG< ;0FG% ʻ 9?%@9ʻ E?%$?ʻ %=9 ;<:ʻ 8>ʻ % 8=ʻ E ;ʻ 9;E;:ʻ 8B; ?;ʻ
ʻ E% ?ʻ ?;ʻ 9 8=Bʻ ? ;<:ʻ 8>ʻ ?;ʻ $8$8<0=G ʻ ;C 8=ʻ ; ;=:%F ʻ 8ʻ
<@ 8F<=<ʻ E<9ʻ :%A% :;:ʻ F; E;;=ʻ E8ʻ ?89 %;ʻ @ %=$;9Ɗ 8=;ʻ 8>ʻ
E?8 ʻ @899;99;:ʻ ?;ʻ 8G= <%=9ʻ ?;ʻ ;;@?<= 9#ʻ <=:ʻ ?;ʻ G %=8G9ʻ
$< FG=$;Ɗ <=:ʻ ?;ʻ 8 ?;ʻ ;=I8C;:ʻ ?;ʻ 8 ;ʻ 98 %:ʻ %$?;9ʻ 8>ʻ :8N
;9 %$ʻ %=:G9 Cʻ >8 ;%B=ʻ <:8ʻ <=:ʻ ?;ʻ $<@<$%8G9ʻ ?< F8G ʻ 8>ʻ
%=JG; <;ʻ E?%$?ʻ ;$;%A;:ʻ <=:ʻ :%9 %99;:ʻ ?;ʻ >;;9ʻ 8>ʻ ?;ʻ <9ʻ
<=:ʻ ;9 ʻ =ʻ ?%9ʻ ?89@% <F ;ʻ %9 ;ʻ <ʻ <=ʻ ;JG<ʻ :%9 <=$;ʻ R<9ʻ %ʻ
E<9ʻ $8 @G ;:Sʻ > 8 ʻ ?;% ʻ ;9@;$ %A;ʻ $8G= %;9ʻ ?;ʻ 9% Hʻ ; $?<= 9ʻ
8>ʻ ?%=<ʻ E?8ʻ ?<:ʻ $8 ;$;:ʻ %=ʻ ?;% ʻ A8C<B;9ʻ < 8;9ʻ $ 8A;9ʻ =G 0
ʻ ;B9ʻ <=:ʻ 9<=:<0E88:ʻ <%= <%=;:ʻ <ʻ > ;;ʻ <=:ʻ F;=;>%$%<ʻ $8 N
; $;ʻ E% ?ʻ ?;ʻ %=?<F% <= 9ʻ 8>ʻ ?;ʻ ; 9%<=ʻ BG >ʻ ?;ʻ 9GFI;$ 9ʻ
ʻ 8>ʻ ?;ʻ B ;< ʻ H%=Bʻ ;M< ;:ʻ E% ?8G ʻ <ʻ %A< ʻ ?%9ʻ @8E ;ʻ <=:ʻ <BN
=%>%$;=$;ʻ Ɗ <=:ʻ ?;ʻ 8 <=ʻ E?8ʻ $8=>8G=:;:ʻ ?;% ʻ A<=% Cʻ FCʻ
$8 @< %=Bʻ ?%9ʻ @< Cʻ $J%=ʻ E% ?ʻ <ʻ B8 :ʻ ;:<ʻ 8>ʻ ?;ʻ ; @;8 ʻ
=<9 <9%G ʻ ?<:ʻ 9<% ;:ʻ 8ʻ ;C 8=ʻ %=ʻ <=ʻ # ?%8@%<=ʻ 9?%@ʻ <9ʻ <ʻ
9% @ ;ʻ @<99;=B; ##

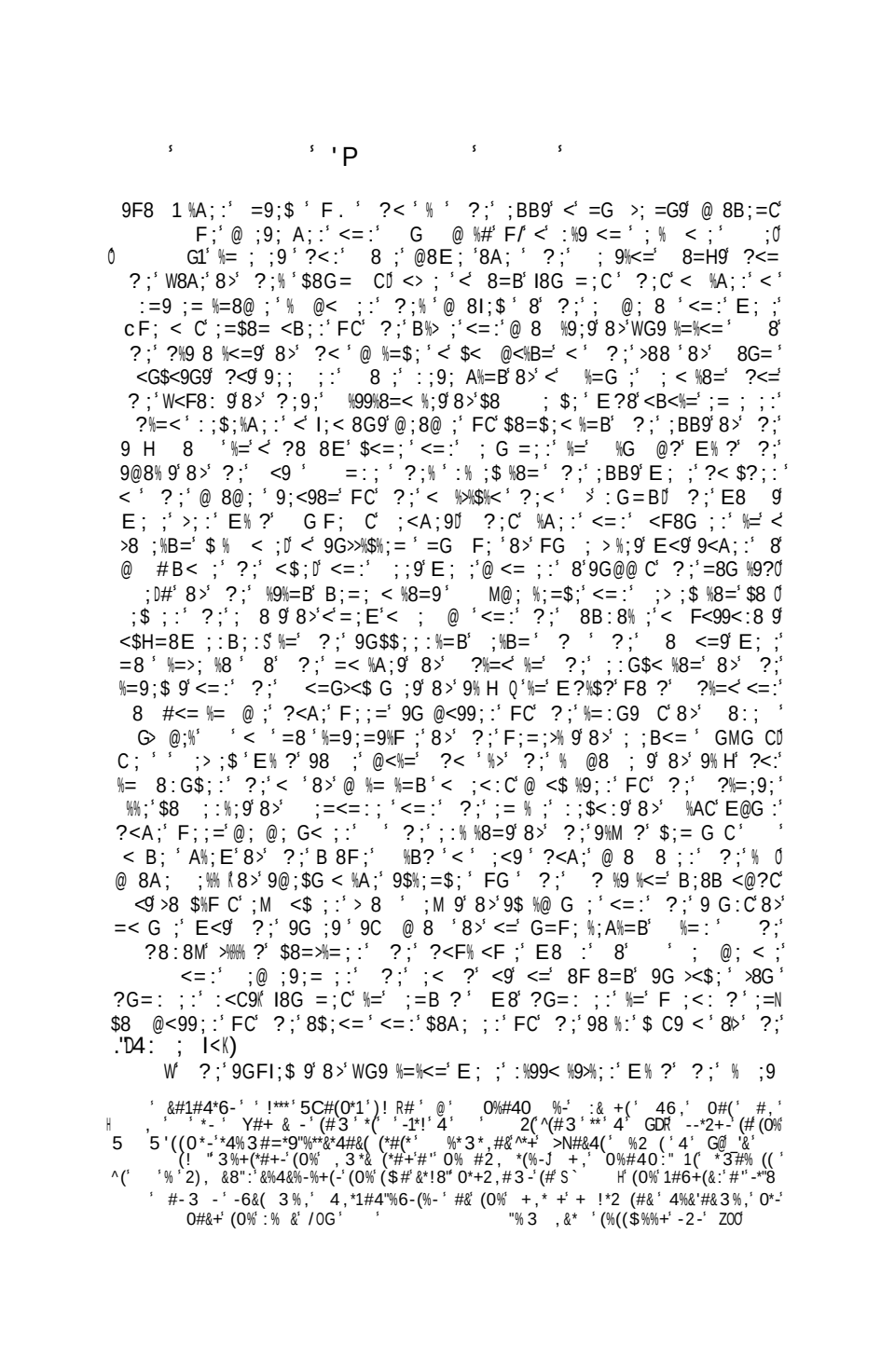
+ʻ A#&ʻ (0%ʻ 0*+%-%ʻ + !*2 (*#+ʻ (4ʻ " 11 ʻ *>ʻ# 10*+ʻ 4%&0 4-ʻ (#ʻ :"#+ʻ -%%ʻ
%((6,#(ʻ *#+ʻ (0%ʻ ($# 0#3%(+ʻ & !%""%&-ʻ 4ʻ ** ʻ < @ʻ . /@Rʻ 7 34*%&ʻ
^!#"ʻ **ʻ 4ʻ < Rʻ (0%ʻ *-(ʻ 0*(#-#40*2+%ʻ ,%-ʻ ,%6>ʻ +,%-ʻ ^(#3ʻ *ʻ 4ʻ Rʻ +,ʻ (0%ʻ
*-(ʻ C%+%& "%ʻ ,%-ʻ #: 2%-ʻ ^(#3ʻ !*ʻ 4ʻ DG R

*3ʻ (+#$"%,2^%ʻ #&ʻ & (0%&ʻ *2+#& +1%ʻ #eʻ (& 9#ʻ "*+:ʻ (#"%3:ʻ &&*+ʻ
&>* +ʻ E1ʻ #"ʻ (0%1#6+(&*%-ʻ % -(&$ &,ʻ #" 4%ʻ #3#&*+ʻ *-ʻ'*+%":ʻ*""6-(& (%,ʻ 9:ʻ
,T +!*""%ʻ ^ +(*F+*(ʻ C%#2& 4O*F6%ʻ !"+,%ʻ %-4%1* "":ʻ 4ʻ * *5:ʻ 6&ʻ 2%#K
2& 4O:ʻ #"ʻ +,*ʻ*-ʻ*34&#!%,ʻ9:ʻ1#3 3%&1%ʻ +,ʻ1#+F6%-(J +,ʻ0 -ʻ9%%+ʻ *""6-(& (%,ʻ
9:ʻ(0%%*5*%0(ʻ 3 4-ʻ +,ʻ3%3#*&-ʻ#"ʻ 3 3#&ʻ %++%(ʻ "ʻ0%%>(%+,-ʻ(0%ʻ-4O%&%#"ʻ
0*-ʻ*+F6*&*%-ʻ$*(Oʻ (0%ʻ- 3%1&*(*1 "ʻ 8+#$"%,2%ʻ ʻ- 51*(:ʻ0%ʻ $*""ʻ -611%%,ʻ +,ʻ
3 :ʻ-6&4 --ʻ(0%ʻ*&-(ʻ#"ʻ 3#,%&+ʻ 2%#2& 4O%&-

Tʻ 0%ʻ 4*#9 4%ʻ#"ʻ "*+:ʻ^!*ʻ `NUʻ #"*+6-'1ʻ /<Rʻ +,ʻ "+4 -ʻ^ "*+* +-%ʻ >%'ʻ
1*(('4ʻ@ 9ʻ Uʻ +,ʻ 3#-(ʻ #"ʻ *0%ʻ 616- (-ʻ$"(#ʻ#'(%+ʻ 1#+'#6+,ʻ^ ʻ #0,-ʻ#'

9 9% H F;$< ; 8 %=:%9@;=9<F ; %%; ; @; 8 WG9 %=%; ##
9<E E% ?$8=$; = ? < ? ; ; 9%<=9F<:8$$G@%;:FC <=:<:%:%<8;
9;< ?; 8=8@8 C 8 ?%9 % @8 <= 9G@@ C <=: /< ?; E;< ?
8 ?%9GFI;$ 9 E<9 $8= %=G< C : <%=;:#<' %8@8 ; =; %;9
<=:%:8<; 9 =<$ %A;B8A; = ;=E8G :?<A;;9 8 ;: ?;
<:; 8 BC@ <=: ?;=<A%B<%8=8 >? ; ; :<E?%$?F<:
:;$<C;:E% ?? ;?;@ 89@; % C 8 ?; ; @% ;0 <=: ?; 8%
A;99; 9 %B? ?<A;9<%;: >8 ? ;@G $?<9;8 9% H 8 ?;@8 9
8 ;C 8=8>< <$$<8 ; A;= 8 ?%=< WG9 %=%<= ; F $$:
< 8 ;?G F ;;M@;:%;= <=:98 %$% ;: ?;<%:8 >? % 9%<=
< %;9 ?;# ?%8@%<=9 8 FC99%=%<E?8?<:;$;= C <$JG% ;:
?;< 9 8 =<A%B<%8= ?;9@% % 8 <:;<=:?;9;<@8 8 8 ;
:G %9 %19 % :;$8<;:E% ?? ;8@?%;9 8 <6 ;$%<=$8=JG; 8
8=B ?; > %$<= $8<9 ?;C @;=; <;: 8 ?; ;JG< 8 %=
9;<$?8 B8 : ; ; <:9 <=:<8 <%$9 FG ?;C E%9; C :;N
$%=;: <= G=;JG<$8 @; %%8=%=E?%$?; C G9 F;<E<C9
@ ;A;= ;: FC ?;A%$%=% C 8 ? ; ; 9%<=9 8 ?; < H; 9 8
=:%<0 <=: ?;; @; 8 9GF % ;: 8 ?;:%9<@@8%= ;= %
?%9 E%9?;9 E ;B <%%;: FC <= G=;M@;$;: ;A;= ?;B89@;
?<: F;;= @ ;<$?;: 8 ?; =:%<=9 <F%9?8@ <;<:C B8A;=;:
?; ? %9 %<=9 8> ?8 <9 8=?;@;@@; $8<9 8> <<F< <$?G $? E<9 @ <= ;:%= ;C 8=0 <=:0 ?; %99%8=<%;9 @G 9G;: ><d]
>88 9 ;@9 8>$8 ; $; 8 ?; ; % %;9 8> 9%<#T E 8 ; 9M>%
8=H9 ?<: 8=B ;9%:;:%= ?%=<@; ?<@9 %= ?; 8C< $% C 8>
<=H%= ?; 9;< 8> < 8=< $?<:: %$;: 8 >8 ;%B= 9G@; 9 % %8=9
<=: E?8 <$ G< C ;$;%A;:<= ; F<99C > 8 ?;%9;8>
%:9 ?;% @%8G9 $$G@< %8=9 ?;C A%;E;:E% ?< $G %8G9 ;C;
?; $8 8= ;99 8> ?; ?%=;9; ?; <=G><$ G ;9 8> 9% H <=:
?; C %<;9 8> 9% H0E8 9 E?89;:G$< %8=R;% ?; 8= ;;9 8
%= ?8G9;9$?<:8=$;/F;=$8=9%:; ;:<9 ?; <F8G 8> JG;=9#
?;C 988= :%9$8A; ;: ?< % E<9 % @ <$ %$<F ; 8 <=9@8 F;>

%:"#+ +,' 63 (& '*- 3#&% 1"% &":,%-1&*9%,' 9: #-3 -' **,*1#4"%6-(%-J :%(
%!%+(0% 0&*-(* +'(#4#2& 40%&0 -'%> 22%& (%,'*(-',*3%+-*#+- *-'*+'#&3 6#
#+(0% +,* + +,' 0*+%-%'(& ,%'*-& &%' +,'16&*#6-'3 **' 4' < J3'>*'4'<<@ <<
%,*(' #+(' 61#+R
+' %%' &#1#4*6- %&-*1'^3 **'1'DGR #-3 -' ''#&,-'-#3%'*+(%&%-(*+2
"%,2% #" (0% 4#&(+, *+-1&*4(*#+'_($#'*+-1&*4(*#+-'^R'#" (#"%3:' 6%&2%(%-'^*)6)J
^DR'#" '8*+2'#" >63'#'' '3610 " (%&', (%&'#'" ,6 -'^ #4#2& 40' 0&*-(
< ' .G .<R' +,'#"(0% (& ,%'#'' (0% >63*(%-'<8=B'(0% '&*1 +'%9 -(' #" &"$5'
#& Y*+2*^ ' < ' < R' +,' -'' &' -' 4&#9 +%'^3 >*'4'<< R' _ +'(0% >63*(%-'
-%% 7*"" 3 ++-' &(*1"%*+'(0% 90 +,"6)*2%+'#''(0% %&"*+' $<:; ' C'0 5'
%%' (0% 0&*-(* +' 3*--*#+-' *+' +,* '*+' #-3 -'^ ' *' ' 8'>0'4
<<@R' +,'1#+-6"(--%3 +' *9"*#(' &*%+('^(#3'*!'4'.< . R' =
5 && 0%'*+!%+(*#+'3 +6' 1(6&%' +,' 2%+%& "6-%'#'' *"8'*+' 0 3 5 :'9%5+' '
760 ",%^,%-1&*4(*#+' C + & "% ,%" ' 0*+%'(#3'**'4' /'
!*+1%#'' 0%8* +'*-(0% 3#-(&%+#$+%,'9#(0''#&'F6 +(*(:' +,'F :



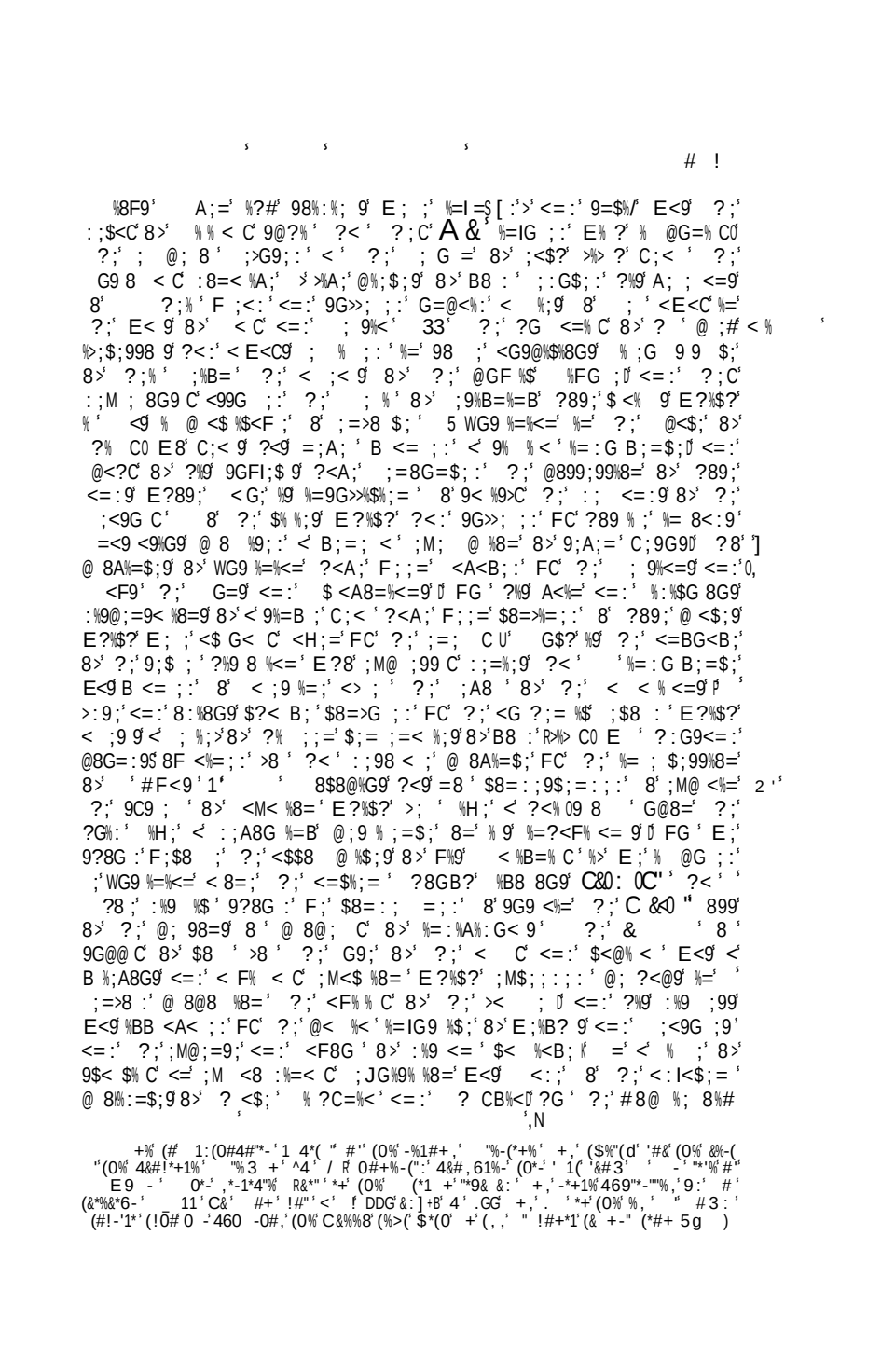
<=:' E% ?' ?;' B8A; = ;= ' G 8@;' E<9 8 ; 0 <8' 0 '
F< %<=9' <= :' 9%<' FC' ?;' 8=H9'D' ?;' @;C; I 'G>' ?;' %;9 '
$8G <B;:' ?;' <:;' <=:' <=G><$ G ;9' 8>' ?;' (T /
8>' <F8G ' E<9 $8=9G ;:' FC' ?;' G=@ 8>% <F ;' 9 < C<= 9 1 E'
$?G $?' ?;' 9 < ;' <=:' ?;' < C'D' <=:' <' <@%:' :;$;<9;' E< 7'1T11
%=' ?;' >%M;:' <=:' $% $G < %=B' $<@% < 9'E %%$?' $8=9 % G ;' ?;' =< W#E '
E;< ?' ?;' @GF %$' :%9 ;99' ?<:' F;;='< ;A%< ;:' FC' ?;' .$8=T"*W>
8>' %C%9 <9%G9'<=:' ?<' @ G:;=' ; @; 8 '<$$G G < ;:'<='%==<; ;'
;<9G ;' E?% ;' ?;' :; %A; ;:' ?%9' @;8@ ;' > 8 ' ?;' 89'8:%8G9' '
8@@ ;99%A;' <M;9' ?;%' B < % G:;' G=%A; 9< C' <@@ <G:;:' ?;' ' '
<F8 % %8=' 8>' ?;' ' ' <' @; 98=<' %FG ;' 8=' ?;' % QZ'
:G9 C' 8>' ?;' @88 T' FG ' 8 ;' %= 8 ; <F ;' <9' % '9?8G :' 9;; ' %E1
' ?;' >8 ' ?<=' %=' ?;' 9GF9 <=$;' 9%=$;' ?;' >8G %9?%=B' ; C' V>' '
:;99<' @<%:' 8= C' 8=;' ?G=:;:' <=:' >8 C' @8G=:9'8>' B8:' E G$#'
<9' $8 ;$;:' %=' >8G ' C;< 9' >%08 ' ;=' ?8G9<=:' < %>%$; 9 T' ;'
9G$?' E<9' ?;' @< 9% 8=C' E?%$?' 9G@@8 ;:' ?%9' %F; < 0:%9@89% %8=
?<' %=' <' ;%B=' 8>' E;=C09; ;=' C;< 9' =<9 <9%G9' 9<A;:' > 8 ?%9'
<==G<' ;A;=G;' ?;' ?;' ;=8 8G9' 9G ' 8>' ?% ;;=' % %8=9' ; %=B'
8' ? ;;' ?G=:;:' <=:' E;=C' ?8G9<=:' @8G=:9'8>' B8:T# %9'
;M< @;' E<9' =;B ;$;:' <=:' ?%9' ;<9G ;' E<9' <FG9;:' ' ?;'
=;@?;E' 8>' WG9 %=' ?;' %$?;9' 8>' WG9 %=%<=' E; ;' 9@;;:%>C' ;MN
?<G9 ;:' FC' < 9' <=:' FG% :%=B9' FC' < F% %8G9' E< 9' <=:' %@%8 0'
%=%8G9' ;< %;9' %9' ;A;=G;9' E; ;' >8G=:' %=<:;JG< ;' 8' ?>;'
;M@;=9;9' A; C' < ' E<9' %;:' 8';M 8 ' > 8 ' ?;' @;8@ ;' ?;

0&*-(* +' #4#2& 40:'^ #+(' 61#+' &-%' (' 1' *R' *+' $0*10' 0% &%'6(%-' (0%' *+5*4 '
#4*+*#+' (0 ((0% % &(0' *-' '2"#9%' J +,' 0#(*6-' 0 ,' &% ,' (0*-' $#&8' ^ #, ' >>>!*' 4
' (#R' $0*10' ,*-4" :-' (0% 4&%)6,*1%-'#"' ' 3#+8' $*(0' (0% 8+#$"%, 2%'#'' ' 3 %'10- *"J'
(0% 3#-(' ! "6 9"% 4 &(0 -' 9%%+' 2*!%+' *+' A&%+10' +,' *+' C&%%8' 9:' %"10*-5%%'
0%!%+#(^ %" (*#+-' 6&*%6-%-' 4 &(' *R' +,' (0% $0#'%' *-' -*+1% 469"*-0%,' 0*'
5"%+,*,'%,*(*#+' 9:' (0% '%&% #+(' 61#+' ^ #! ' #""%1(*# (&6 3' &*-' @G@ 0'
!#"-' *+' '#"' (#3' **' 4' <<. R' 6((0%',*(#& ' (0%#"#2* +' 3*20(*"6 5 (' +#0'
,*-1#!%&*+2' (0% %-(#&* +' 0%&%-:'#"' #-3 -' $0*10' 0 -' 9%%+',%(%1%,' 9:'" ' &#[%'
^ 0&*-(* +*-3%,%-' +,%-'(#3' *' 4' .G / R' +' #-3 -' -%%' C%"[%&' *+' &'$0'
(' 4&#(%-(+(*-10% 0%#"#2*%' *>' 4' G/' 8# e _ <R b
h' ! 2&*6-' ^' ***' 1' <' .GR*-' 3*+6(%' +,' 2& (%'6"' 96(T +2&:' $*(0' Y45#3*(-' '#&'
'1 "63+* (*+2' (0% 2&% (#+-(+(*+%' +' 1#""%1(*+2' "" (0% 9#+,-' +,' &%1#&,-'#"' '
(0% (>0 (0% 06 3 +*(:'#"' + -(-*6-' $ -#,*"%2&+(' +,' &('6"B' (0%&-' $%&% -# 3 %K
(*3%-'1# 3 4*"%,'(# 4&#-(*(6(% (0%*&' , 620(%&-'^Y#-*3' *-(' '**'1' <' 4' 0 /
4-(%' @ .R' *3#(0%6-'#"' C ['10#-%'-610' +' %!%+(' '#& (0% -69)%1(' #"' '(& 2%,:'
^ 6*, -' (#3' ***' 4' .@/R' $0*10' 1#+(&*96(%,' (# (0% 9#"*(#+' #"' '0%' (>' %,&%0")-' ?
4' </R W +'0 44:'*+-(+1%^*"'*(9%' (&6%R' #"' (0%' 6-%' #"' (0%' ("% (&%' _ +' + -(-*6-'
"*+ +1%' 14' #0+' :,6-' 7 % 2' ***' ./' . b' H
-# %%' #-# ' (: (%-' *+' (0% *9"*#(0%1 ' +%+("*-' #"' --%& +'^(# 3' *' 4' ' ' '
'1' <' 4' DD' %, &*20(b' 0*-' 1 4*((*#+' (>' *-' -"*20(":' 3%+(*#+%,' '#"((*%'
T 0&#+*1"%'#"' ,%--
"3 5&###40*-' ^ +%1,#(' 1' R '*>%-' (0*-' -6 3' '&#+(' (0%' &%4#&(' #"' (0%' (&%6- &3-'
(0%3-%"!%-' *9%&* -'0 ,' ! ' ' 'B' 96(' '#&',*' '%&%+(' $ -' -' %3 4*&%'0 4#*##
(0 (#"' + -(-*6-

B8 :' <=:' 9" ./1' E?%$?' ?;' 9$< ; ;:' E% ?' <' <A%9?' ?<=:' > 8 '
» <'# ; 9%<' 8' [<<$;Ð ?%9' & 0G.' ' .' < H;:' FC' ?;' A%$%99% G:,9'
',8 ' < ?; '3#' ?;'$8 F< '8>' <@<$%8G9=;99'<=:'<A< %$;'8>'9@ ;=:8G '
<=:'@8A; CÐ ?;' %A;:' E% ?' ?:' ;@G < %8=' 8>' ?%:::;=' ;<9G ;9 11'
<=:' F;JG;< ?;:' 8' ?%9' 9G$$;998 ' ?;' @<C ;=' 8>' ?%9' :;F 9 11'
G$?' <' $?< <$; ' ?<9' F;;='IG9 C' <$$G9;:' FC' ?;' A8%$;'8>' ?;'
@;8@ ;' <=:' 8>' @89 ; % CÐ FG ' @GF %$' :%9$8= ;=' %9' $;:G 8G9Ð
@ %A< ;' < %$;' %9' F8 :Ð <=:' <' 8A; ' 8>' G ?' E% ' @; G9;' E% ?' <'
9G9@%$%8G9' ;C;' ?;' %=9 G$ %A;' <=;$:8 ;9' 8>' 8$8@%G9' ?;' 9;$;'
?%9 8 %<=' ;@ ;9;= 9' 8= C' ?;' A%$;9' 8>' WG9 %=%<=' <=:' ?89;' A%$;9'
< ;' :< H;=;:' FC' ?%9' < ;A8 ;=' @;=$% ' F%BG8G9' <$ %8=9' < ;'
% @G ;:' 8' ?;' E8 9' 8 %A;9Ð ; 8' %9' $8=>8G=:;:' E% ?' BG% '
<$$%:;=' % ?' :;9%B=' <=:' <E9' E% ?' <FG9;9' ?;' @< %<' %=IG9 %$;'
8>' <' 8 ;=' %9' :;M ; 8G9 C' <@@ %;:' <9' ?;' B;=; <' <M% ' 8>' <'
;%B=' 8>' ?% C0 E8' C;<9' Ð ?;' ; @; 8' < 8=;' %9' <:;' ;9@8=9%F ;'
>8 ' ?;' ><G 9' 8>' ?%9' 8>>%$; 9' ?;' :%98 :; 9' 8>' ?;' % ;9' <=:' ?;'
$8 G@ %8=' 8>' ?%9' 9GFI;$ 9Ð <=:' ;A;=' ?;' $< < % %;9' 8>' =< G ;'
@ <BG;9' ;< ?JG<H;9' <=:' %=G=:<%8=9' < ;' % @G ;:' 8' ?;' @ %=$;'
8>' ?;' :; 8=9' E?8' ?<:' %9$?%;A8G9 C' <99G ;:' ?;' >8 ' 8>'
WG9 %=%<=1T

> ; ' ?%9' @ ;$<G %8=' ' 9?< ' F %;>C' ; < ;' ?;' <=;$:8 ;9' 8>'
- ¦= $%8<9 <A< %$;'<=:' <@%=;' G=:;' ?;' >8 8E%=B' ?;<:9' ' WG9 %=%<=' E<9'
- '! *2- 98' @ 8>G9;' ?<' ?;' $8G :' =8' F;' %F; < ' ?;' $%A%' <=:' % % < C'
8>>%$; 9' E?;=' ?;C' E; ;' <: % ;:' %= 8' ?;' 9; A%$;'8>' ?;' @< <$;'
8F <%=;:' <=' ?G F ;' <=H' <=:' <' 8:; < ;' 9 %@;=:' Ð ?;C' <9N
$;=:;:' FC' 9;=%8 % C' 8' <' 9 < %8=' 8>' <>> G;=$;' <=:' ;@89;Ð ?;'
<==G<' @;=9%8=9' 8>' E?%$?' ?;' 89' ?8=8G <F ;' $ <99' E<9'
<F8 %9?;:' FC' WG9 %=%<=' < 8G= ;:' 8' >8G ' ?G=:;:' ?8G9<=:'
@8G=:9'Ð <=:' ?%9' :8 ;9 %$';$8=8 C' E<9' :;@ 8 ;:' FC' ?;' A;=<'
8 ' %=:%B;=' 8G %;9' <9' ?;' <9 ' 8G <B;' 8=' ?;' <I;9 C' 8>' ?;'
; @% ;' ?;' @89 9' ?;' 9< < %;9' 8>'@?C9%$%<=9' <=:' ?;' =8$ G =<'
% G %=< %8=9' E; ;' 8FI;$ 9' 8>' 8 ;' B;=; <' $8=$; =' Ð <=:' ?;'
$% %;9' %B? ' IG9 C' $8 @ <%=' ?< ' ?;' G9G @;:' ?;' G=%$%@<'
;A;=G;9' E?%$?' ?<:' F;;=' <@@ 8@ %< ;:' 8' ?;9;' G9;>G ' %=9 %0

! 2&*6-'^3 *!'1' <GR' *+' (0%'+%>(' 2%+%& (*#+' $ -' 3#,%& (%' +,' $%"" *+'#&3%,J
+,'D#+ & -' \' >*!' 4' '%' bR'*+' (0%'>**(0'1%+(6&:'0 ,'&% ,'$*(0'1 &%' +,'(0#620('
$*(0#6('4&%)6,*1%J)%(' (0%*&' 5#6&-' &%' "3#-(' *' 9" 18' -' (0#-%#*'' (0% +%1,#(%-
"& &#1#4*6-' ^ +%1,#(' 1' <GR' &%" (%-' (0%*,"%' 1#+)%1(6*%-' #'' (0%' (*'+%-' 0%'
',% (0'#'' 6-(*+* +' -' :-' (0% -%1&%(' 0*-(#&* +' $*"" %>4#-%' 0*-' $% "(0' #&' 4#!%&(:
5 %%' #&* 46-',% 6,*96-' 6-(*+*' 62' '"' ** ' D G' E1' < .' E1
P' "6&*3 ' -66(' !*!# +*3*6 3' 0%2"%1(' 4 &%+(*
+,%'(#('%>0 6-(#-'1#+(& >*(',%9*(' '*-16-' f
%+(%+ &*%-' "2#",' $%&%' 9&#620(' 9:'-(&#+2' -6 3-'*'((# (0% 0*44#,&# 3 %U
0\' 7%9*(' '2%+* *-' 4%&-#"!*(' 1(&(' &%%4*(
P' 0%' +%%,#(%-'^1' *+Q.' 0 ' DG <GR-(F)4":' 3 +:' ' 1(-' +,' #&%'1#34" *+'-



<> ; ' < E ; E%98I=;' I8G =;C' <=:' < @; %8G9' =<A%B< %8=' ;$;%A;:' 8' %=<:;J> ;' < $8 @;=9< %8=' ?< ' ?;C' E8G :' ?<A;' $?89;=' ?;' < ; =< %A;' 8>' :; %A; %% ' F8 ?' ?;' $8 ' <=:' @ %$;' < ' ?;' :8 9' 8>' ?;%' B <=< %;9' ?;9;' @ ;$<G %8=9' %B? ' %=:%$< ;' < ;=:; ' 8 %$% G:;' >8 ' ?;' E ;>< ;' 8>' ?;' <@% < D C; ' 8=9 <= %N =8@ ;' :%;' =8 ' ;9$<@;' ?;' <@<$%8G9' :;9@8 %9 ' 8>' WG9 %=%<=' % ' ?%9' ;%B=' ?;' 9 <% 9' 8>' ?;' 89@?8 G9' <=:' ; ;9@8=' E; ' 8@;=' 8' ?;' > ;;:8 ' 8>' <:;'<=:'=8 ?%=B'E<9' @ 8?%F% ;:';M$;@' ?;' ;M@8 < %8=' 8>' < 9' >8 ' ?;' 9; A%$;' 8>' ?;' < F< %<=9' ' ;<$?' 8>' ?;9;' B< ;9' 8>' ?;' $% C' <' @ <; 8' E<9' 9 < %8=;:' ?;' %=%9 ' 8>' @; %<' <A< %$;4 ?;<AC' $G9 8 9' E; ;' % @89;:' 8=' ?;' A;99;9' <=:' ?;%' ; $?<=:%L;D ?;' 8@@ ;99%8=' E<9' ; < %< ;:' 8=' ?;' ?;@ ;99' $8=9G ;'D ?;'@88 'e ;' <>%$;:'FC' ?;' < %>%$%<' 9$< $% C' <=:' ;M8 F% <= ' @ %$;' 8>' ?;' < H;D <=:' <' @;8@ ;'<$$G9 8 ;:' 8' :;@;=:'8=' ?;' %F; < % C'8>' ?;%' @ %=$;' %B? '98 ; % ;9'$8 @ <%=' 8>' ?;':;>%$%;=$C'8>'E< ;'<=:'F ;<:1D ?;'<; %<' %FG ;' E% ?8G 0<'=< ;' <' <E' 8 ' <' :;%=% ;'8FI;$ ' E<9' <=' <==G<' B%> '8>'8@;' ?G=: ;:'<=:' E ;= C' ?8G9<=:'@8G=:9' E?%$?' ?;' ; @; 8 '<$$;@ ;:'>;8 '?%9' <; 8 %<='@ <;>;$ D <=:' ?;' ;<=9'8>'@<C ;=' E ; ;' <F<=:8=;:' 8' ?;' :%9$; %8=' 8>' ?<' @8E; %>?' <B%9 < ;' A;='9G$?' <' <M' E<9' ;99' %= 8 ; <F ;' ?<=' ?;' @ %A% ;B;' 8>' 8=8@8 %;9' E?%$?' $?;$H;:' ?;' ><%' $8 N @; % %8=' 8>' %=:G9 C' <=:' >8 ' ?;'9<H;' 8>'<' 9 < ' <=:' :%9?8=;9' B<%=' % @89;:' <=' < F% < C' FG ?;=' 8=' ?;' E<= 9' <=:' GMG C'8>' ?;' 9GFI;$ ' %# 9' 988=' R ' <=9$ %F;' ?;' =;$:8 ;9$' <9' ?;' ;M G9%A;' 9< ;' 8>' 9% H' E<9' G9G @;:' FC' ?;' = ; %<' ;<9G ;' <' E?8 ;' @;8@ ;' ?;' <=G><$ G ; 9' 8>' C ;' <=:' ; C G9' E<9' ;N :G$;:' 8' ;M ; ;' %9;#' <=:' ;% ?;' @; %9?;:' E% ?' ?G=B;' 8' > ;:' 8' ?;' ?89 %;' :8 %=%8=9' 8>' ; 9%<U' &' @ 8A%=$;' %B? ' 9G% ;' FC' ?;' :;$<C' 8>' % 9' <=G>;$ G ;9C' FG ' %=' ?%9' ;M< @;' 8>' 9% H' 8$8@%G9' ?<9' @< %< C' 8A; 88H;:' ?;' %=;9 % <F ;' <=:' <9 %=B' F;=;>% ' %A?%$?' ?;' ; @% ;' ;$;%A;:' > 8 ' ?;' $G %89% C'8>' WG9 %=%<=' %9' <:%%8=' 8>' 8=;09;A;=?' 8' ?;' 8 :%=< C' @ %$;' 8>' $8@@; ' 8=;C' <C' F;' %= ; @ ; ;:' E% ?' ?;' 9< ;' $<=:8G D <=:' ?;'< ; < %8=' E?%$?' %B? ' F;' E%9;' <@@;< 9' 8' ?<A;' F;;=' %==8$;=D 9%=$;' ?;' =;% ?;' < 8C;:' ?;' @G % C' =8 ' ;=?<=$;:' ?;' A< G;' 8>' ?;' B8 :' $8%=11' ?;' ;B<' ;<9G ;' 8>' @GF %$' <=:

Q #O((" " ' ^(#3 ' **' 4' D<D '4' . bR 3'%+(*#((-' (O%' $ +(' #'' 9&%+ ' +,' Y#+ & -'^*'O*Q' ''1 _1' ba'(O%' '% ,%+'4*4%-'$980' 6-(*+* +' #&' Q*-'-%&! +(-'-(#"% '&#3'(O%' F6%,61(-

%%4#& +' 6&%6- #+m -*> # #'' +' #6+1% #'' 2#",' *+-(% ,' #'' *# '0%'2 !%'+# 3#&%'(0 +' . G '#""%-'#&'#6+1%-' #'' 1#44%&' ' !-4L4#&(-!+'L#L'(0%'3L+'L((%'# (O%' 3 &8%(' 4&(%' 36-(' 0 !%' #4' 4&#,61%,' ' -*5E(:'#'' -3(,'' 8=;C

@ %A< ;' @<C ;= 9' ' ?;' < @ ;' % %B:%$ %88' ;JG% ; :' FC' ?;A.%/ C' >< ; 9' 8>' ?;' ;A;=G;' G' <$$8 @ #%' >; ;% ' ;=B<B; ./% 9' %B? ' F;' @ <$; :' %=#='8:%8G9' %B? ' <9"%>' ?;C' ?<:' @< ;?<9; :' > 8 ' ; @; 8 ' ?;' %A;9' <=:' >8 G=;9' 8>' ?;%' i; 8.0;%%# <9' =:'<' 8 ;' :% ;$' 9< ;' 8>' ?8=8G 9' <=:' 8>%$;9' E<9' <=9<$;:'><' # ;' @< <$;' E% ?' ?;' @; %99%8=' 8 '< ;<9' E% ?' ?;' $8==%A< $;#'8>' WG9 %=%<=' <=:' ?;8:8 <' ?;' $<% 9' 8>' ; % ';A;=' ?V/;' 8>' ><A8G ' E; ;':%9 ;B< :;:' <=:' % ' E<9' < 89 ' ;<98=<F ;' 8' ;M@;$ ' ?< ' ?;' F8 :' <:A;=G ; ' E?8' ?<:' G=:; <H;=' ?;' <:;' 8>' <' <B%9 < ;' 9?8G :' >%=:' <' %$?' $8 @;=9< %8='>8 ' %=>><=C' < ><G ' :<=B; ' ?;' :;F 9' E?%$?' ?;'?<:'$8= <$;:'<=:' ?;'?;<CC'%= ; ;9 ' E?%$?' ?;'@<%:' '9;=9;'8>' ?;' :%9B <$;'<=:' %9$?%;>'8>' ?%9' A;=< ' >E<$ %$;' <' ;=B ?' <E<H;=;:' ?;' 9 G F; %=B' A% G;'8>'WG9 %><<='W <=:' ?;' < ; @ ;:' FC' ?;' 9<=$ %8=' 8>' 8< ?9' <=:' @;=< %;9# 8' BG< :' ?;' %= ;B % C' 8>' ?%9' B8A; = ;=D FG ' <' ?;' ;=:' 8>' <' C;<'8>'@; IG C' ?%9' %B8 8G9' ;:%$ ' E<9' 9G9@;=:;:'<=:' ;8 GI$00' %8='%$;= %8G9 C' <FG9;:' ?; ' %G @?' 8A; ' ?;' % @8 ;=$;'8>' ?; '' ' <E9' ' ?;' ;9 < ;=' 8>' G<%G9' $8G=' 8>' ?;' :8 ;#$ 0 ' :;$ <;:' ?;' ; @; 8 ' ?%9' 98 ;' ?;% ' 8=' $8=:%%8=' ?8E;A; ' ?<' ?;'9?8G :' :%9$ B;' ?%9' :;F 9' <=:' ;B<$%;9' < 8E' 8' ?%9' ? ;;' :<GB? ; 9' <' :;$;= ' <%= ;=<=$;' <=:' F;9 8E' ;<$?' 8>' ?; ' %=' %=< %<B;' E% ?' <' @8 %8=' 8>' ;=' @8G=:9' 8>' B8 :' G ' ?;' 9@ ;=:%:' >8 G=;' 8>' G<%<9' ?<:' F;;=' $8=9G ;:' FC' >% ;' / <=:' :;' %=A;=8 C' 8>' ?%9' B88:9' :%:' ?8 ' ;M$;;:' ?; ' %> %=B' 9G ' 8>' >%A;' ?G=: ;:' <=:' 9%M C0>8G ' @%;$;9' %=' B8 :' 9% %<' %=9 <=$;' >< 6 ;$%<=' ?%9 8 C' <: 8=%9?;:' ?;' ; @; 8 ' 8>' ?;' ?8=8G < ;' @< ' @ ;9$ %F;:' >8 ' ?%9' % %<%8=' ;' $?;$H;:' ?;' 9; >%9?' G G 9' 8>' ?;' ;<9G C' <@@ <G:;:' ?;' $8 %>%:;=$;'8>'?%9'>%;=:' :%9$?< B;:' ?;' ;B<$%;9' <=:' :;F 9' ;:G$< ;:' ?;' ? ;;' A% B%=9' G=:; ' ?;' ;C;' 8>' ?;' ; @ ;99' ?;8:8 <' <=:' :8GF ;:' ?;' <=%<B;' @8 %8=' E?%$?' ?<:' 9< %9>%;:' ?;' @ %=$;' R>8 ' @ %%%#' $<==8 ' F;' B;=; G9$' %9' ;= % ;:' 8' 98 ;' @ <%9;C; ' ;A;=' %=' ?%9' <$ ' 8>',' A% G;' E;' =GJ ' :%9$8A; ' ?;' %=A; ; < ;' $G9 8 ' 8>'9GIJC <= %=B' ? ;

+2*&, ' 4%+1%'*+'1#44%&' $#6",' -%"'' '#&' +#'*+#&%' (0 +' '4%+1%'^ & 89# ' +F#)'* (4'(0%' % "(0' #'' (*#+-' !#"'*' 4 . R' A#& 6-(*+* +!-'2#", ##*Q'-$' !55&('^3'*!'M'<a' e 4' 44%+,*>' <b' ' 0;

;0'I&01' # *)'# *-'1#+1%*!%,'*+' (0%' 3#-('#&3*, 9'%' $ 6 '^ #!%"'' !***' (*(0%', %' *,(%*-'*34&%1 (%' #+50%3-%"!%-' F6*1F6*,' 0 9%+(' (%*"#+3' &3 *+%* ($' %-% J' (0%'4 5'%'' 6, -'(0%'"%4&#-:'#'' C*%-*' (0%' (&%3#&'' *+' 9%-*,%-' '"' (%*+' & a4 *+-' 5

-*3*"(%('3 3% 2%+%&#6-' 1('#'' '&*%+,-0*4'*-'&%" (%,'9:'* 1* +'#'' 6, 3 9' , -'#'' $*+('*+' #> &%'1'DO'0<'(#&+' *'' 4' /<GR' +,'(0%' -(#&:'0 -'4&#,6F%,' +'0(2%+*#*(5' ##+*%,:'#''A#+(%+%"'

legal or natural heirs, which Procopius imputes to the reign of Justinian. His charge is supported by eminent names and scandalous examples; neither widows nor orphans were spared; and the art of soliciting, or extorting, or supposing, testaments was beneficially practised by the agents of the palace. This base and mischievous tyranny invades the security of private life; and the monarch who has indulged an appetite for gain will soon be tempted to anticipate the moment of succession, to interpret wealth as an evidence of guilt, and to proceed from the claim of inheritance to the power of confiscation. VII. Among the forms of rapine, a philosopher may be permitted to name the conversion of Pagan or heretical riches to the use of the faithful; but in the time of Justinian this holy plunder was condemned by the sectaries alone, who became the victims of his orthodox avarice.[91]

The ministers of Justinian

Dishonour might be ultimately reflected on the character of Justinian; but much of the guilt, and still more of the profit, was intercepted by the ministers, who were seldom promoted for their virtues, and not always selected for their talents.[91a] The merits of Tribonian the quæstor will hereafter be weighed in the reformation of the Roman law; but the economy of the East was subordinate to the Prætorian præfect, and Procopius has justified his Anecdotes by the portrait, which he exposes in his public history, of

John of Cappadocia

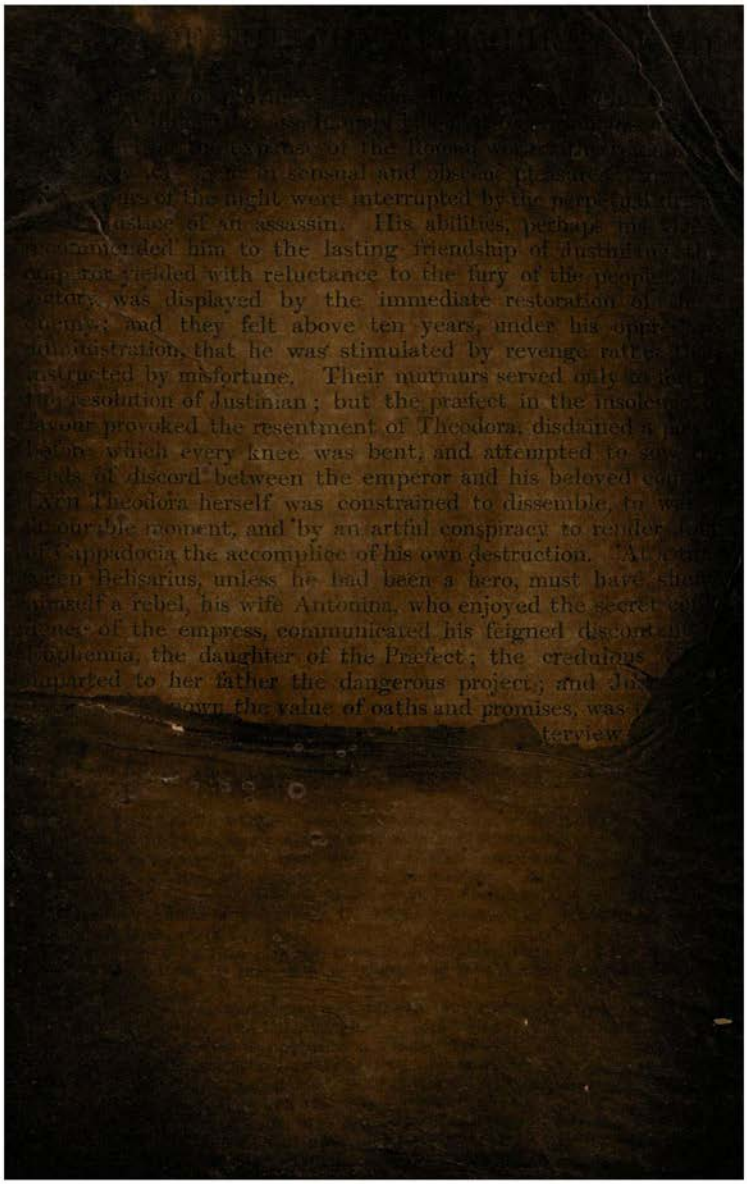
the notorious vices of John of Cappadocia.[92] His knowledge was not borrowed from the schools,[93] and his style was scarcely legible; but he excelled in the powers of native genius to suggest the wisest counsels and to find expedients in the most desperate situations. The corruption of his heart was equal to the vigour of his understanding. Although he was suspected of magic and Pagan superstition, he appeared insensible to the fear of God or the reproaches of man; and his aspiring fortune was raised on the death of thousands, the poverty of millions, the ruin of cities, and

[91] John Malalâ, tom. ii. p. 101, 102, 103 [p. 439-40, ed. Bonn].

[91a] One of these, Anatolius, perished in an earthquake—doubtless a judgment! The complaints and clamours of the people in Agathias (l. v. p. 146, 147) are almost an echo of the anecdote. The aliena pecunia reddenda of Corippus (l. ii. 381, &c.) is not very honourable to Justinian's memory.

[92] See the history and character of John of Cappadocia in Procopius (Persic. l. i. c. 24, 25; l. ii. c. 30. Vandal. l. i. c. 13. Anecdot. c. 2, 17, 22). The agreement of the history and Anecdotes is a mortal wound to the reputation of the præfect. [Besides Procopius, we have a long notice in the treatise De Magistratibus of John Lydus, who is equally unsparing.]

[93] Οὐ γὰρ ἄλλο οὐδὲν ἐς γραμματιστοῦ φοιτῶν ἔμαθεν ὅτι μὴ γράμματα, καὶ ταῦτα κακὰ κακῶς γράψαι—a forcible expression.



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But their wealth served only to attract the bold and rapacious Barbarians; the noblest of the Romans, in the bosom of peaceful indolence, were led away into Scythian captivity, and their sovereign might view from his palace the hostile flames which were insolently spread to the gates of the Imperial city. At the distance only of forty miles Anastasius was constrained to establish a last frontier; his long wall, of sixty miles from the Propontis to the Euxine, proclaimed the impotence of his arms; and, as the danger became more imminent, new fortifications were added by the indefatigable prudence of Justinian.[118]

Security of Asia, after the conquest of Isauria

Asia Minor, after the submission of the Isaurians,[119] remained without enemies and without fortifications. Those bold savages, who had disdained to be the subjects of Gallienus, persisted two hundred and thirty years in a life of independence and rapine. The most successful princes respected the strength of the mountains and the despair of the natives; their fierce spirit was sometimes soothed with gifts, and sometimes restrained by terror; and a military count, with three legions, fixed his permanent and ignominious station in the heart of the Roman provinces.[120] But no sooner was the vigilance of power relaxed or diverted, than the light-armed squadrons descended from the hills and invaded the peaceful plenty of Asia. Although the Isaurians were not remarkable for stature or bravery, want rendered them bold, and experience made them skilful, in the exercise of predatory war. They advanced with secrecy and speed to the attack of villages and defenceless towns; their flying parties have sometimes touched the Hellespont, the Euxine, and the gates of Tarsus, Antioch, or Damascus;[121] and the spoil was lodged in their inaccessible mountains, before the Roman troops had received their orders, or the distant province had computed its loss. The guilt of rebellion and robbery excluded them from the rights of national enemies; and the magistrates were instructed by an edict, that the trial or punishment of an Isaurian, even on the

[118] See the long wall in Evagrius (l. iv. c. 38). This whole article is drawn from the fourth book of the Edifices, except Anchialus (l. iii. c. 7).

[119] Turn back to vol. i. p. 280. In the course of this history, I have sometimes mentioned, and much oftener slighted, the hasty inroads of the Isaurians, which were not attended with any consequences.

[120] Trebellius Pollio in Hist. August. p. 107 [xxiv. c. 26], who lived under Diocletian, or Constantine. See likewise Pancirolus ad Notit. Imp. Orient. c. 115, 141. See Cod. Theodos. l. ix. tit. 35, leg. 37, with a copious collective Annotation of Godefroy, tom. iii. p. 256, 257.

[121] See the full and wide extent of their inroads in Philostorgius (Hist. Eccles. l. xi. c. 8), with Godefroy's learned Dissertations.

festival of Easter, was a meritorious act of justice and piety.[122] If the captives were condemned to domestic slavery, they maintained, with their sword or dagger, the private quarrel of their masters; and it was found expedient for the public tranquillity to prohibit the service of such dangerous retainers. When their countryman Tarcalissæus or Zeno ascended the throne, he invited a faithful and formidable band of Isaurians, who insulted the court and city, and were rewarded by an annual tribute of five thousand pounds of gold. But the hopes of fortune depopulated the mountains, luxury enervated the hardiness of their minds and bodies, and, in proportion as they mixed with mankind, they became less qualified for the enjoyment of poor and solitary freedom. After the death of Zeno, his successor Anastasius suppressed their pensions, exposed their persons to the revenge of the people, banished them from Constantinople, and prepared to sustain a war, which left only the alternative of victory or servitude. A brother of the last emperor usurped the title of Augustus, his cause was powerfully supported by the arms, the treasures, and the magazines, collected by Zeno; and the native Isaurians must have formed the smallest portion of the hundred and fifty thousand Barbarians under his standard, which was sanctified, for the first time, by the presence of a fighting bishop. Their disorderly numbers were vanquished in the plains of Phrygia by the valour and discipline of the Goths; but a war of six years almost exhausted the courage of the emperor.[123] The Isaurians retired to their mountains; their fortresses were successively besieged and ruined; their communication with the sea was intercepted; the bravest of their leaders died in arms; the surviving chiefs, before their execution, were dragged in chains through the hippodrome; a colony of their youth was transplanted into Thrace, and the remnant of the people submitted to the Roman government. Yet some generations elapsed

[Battle of Cotyæum. A.D. 492]

A.D. 492-498

[122] Cod. Justinian. l. ix. tit. 12, leg. 10. The punishments are severe—a fine of an hundred pounds of gold, degradation, and even death. The public peace might afford a pretence, but Zeno was desirous of monopolizing the valour and service of the Isaurians.

[123] The Isaurian war and the triumph of Anastasius are briefly and darkly represented by John Malala (tom. ii. p. 106, 107 [and some of the Escurial frags. published by Mommsen, Hermes, vi. p. 371]), Evagrius (l. iii. c. 35 [whose account is taken from Eustathius of Epiphania]), Theophanes (p. 118-120), and the Chronicle of Marcellinus. [Also: Josua Stylites (who is however mainly valuable for the Isaurians under Zeno); John of Antioch, frags. ap. Müller, vols. iv. and v; Theodorus Lector. The notices of Theophanes are derived from Malalas. The best and fullest account of the Isaurian episode under Leo, Zeno, and Anastasius, is given by Mr. E. W. Brooks, in Eng. Histor. Review, 1893, p. 209 *sqq.*]

before their minds were reduced to the level of slavery. The populous villages of Mount Taurus were filled with horsemen and archers; they resisted the imposition of tributes, but they recruited the armies of Justinian; and his civil magistrates, the proconsul of Cappadocia, the count of Isauria, and the prætors of Lycaonia and Pisidia, were invested with military power to restrain the licentious practice of rapes and assassinations.[124]

Fortifications of the empire from the Euxine to the Persian frontier

If we extend our view from the tropic to the mouth of the Tanais, we may observe, on one hand, the precautions of Justinian to curb the savages of Æthiopia,[125] and, on the other, the long walls which he constructed in Crimea for the protection of his friendly Goths, a colony of three thousand shepherds and warriors.[126] From that peninsula to Trebizond, the eastern curve of the Euxine was secured by forts, by alliance, or by religion; and the possession of *Lazica*, the Colchos of ancient, the Mingrelia of modern, geography, soon became the object of an important war. Trebizond, in after-times the seat of a romantic empire, was indebted to the liberality of Justinian for a church, an aqueduct, and a castle, whose ditches are hewn in the solid rock. From that maritime city, a frontier-line of five hundred miles may be drawn to the fortress of Circesium, the last Roman station on the Euphrates.[127] Above Trebizond immediately, and five days' journey to the south, the country rises into dark forests and craggy mountains, as savage though not so lofty as the Alps and the Pyrenees. In this rigorous climate,[128] where the snows seldom melt, the fruits are tardy and

[124] Fortes ea regio (says Justinian) viros habet, nec in ullo differt ab Isauriâ, though Procopius (Persic. l. i. c. 18) marks an essential difference between their military character; yet in former times the Lycaonians and Pisidians had defended their liberty against the great king (Xenophon, Anabasis, l. iii. c. 2). Justinian introduces some false and ridiculous erudition of the ancient empire of the Pisidians, and of Lycaon, who, after visiting Rome (long before Æneas), gave a name and people to Lycaonia (Novell. 24, 25, 27, 30, [23, 24, 26, 44, ed. Zachariæ]).

[125] See Procopius, Persic. l. i. c. 19. The altar of national concord, of annual sacrifice and oaths, which Diocletian had erected in the isle of Elephantine, was demolished by Justinian with less policy than zeal.

[126] Procopius de Aedificiis, l. iii. c. 7. Hist. l. viii. c. 3, 4. These unambitious Goths had refused to follow the standard of Theodoric. As late as the xvth and xvith century, the name and nation might be discovered between Caffa and the straits of Azov (d'Anville, Mémoires de l'Académie, tom. xxx. p. 240). They well deserved the curiosity of Busbequius (p. 321-326), but seem to have vanished in the more recent account of the Missions du Levant (tom. i.), Tott, Peyssonel, &c.

[127] For the geography and architecture of this Armenian border, see the Persian Wars and Edifices (l. ii. c. 4-7; l. iii. c. 2-7) of Procopius.

[128] The country is described by Tournefort (Voyage au Levant, tom. iii. lettre xvii. xviii.). That skilful botanist soon discovered the plant that infects the honey

tasteless, even honey is poisonous; the most industrious tillage would be confined to some pleasant valleys; and the pastoral tribes obtained a scanty sustenance from the flesh and milk of their cattle. The *Chalybians*[129] derived their name and temper from the iron quality of the soil; and, since the days of Cyrus, they might produce, under the various appellations of Chaldæans and Zanians, an uninterrupted prescription of war and rapine. [Tzani] Under the reign of Justinian, they acknowledged the God and the emperor of the Romans, and seven fortresses were built in the most accessible passes, to exclude the ambition of the Persian monarch.[130] The principal source of the Euphrates descends from the Chalybian mountains, and seems to flow towards the west and the Euxine; bending to the south-west, the river passes under the walls of Satala and Melitene (which were restored by Justinian as the bulwarks of the lesser Armenia), and gradually approaches the Mediterranean sea; till at length, repelled by Mount Taurus,[131] the Euphrates inclines his long and flexible course to the south-east and the gulf of Persia. Among the Roman cities beyond the Euphrates, we distinguish two recent foundations, which were named from Theodosius and the relics of the Martyrs; and two capitals, Amida and Edessa, which are celebrated in the history of every age. Their strength was proportioned by Justinian to the danger of their situation. A ditch and palisade might be sufficient to resist the artless force of the cavalry of Scythia; but more elaborate works were required to sustain a regular siege against the arms and treasures of the great king. His skilful engineers understood the methods of con-

(Plin. xxi. 44, 45); he observes that the soldiers of Lucullus might indeed be astonished at the cold, since, even in the plain of Erzerum, snow sometimes falls in June and the harvest is seldom finished before September. The hills of Armenia are below the fortieth degree of latitude; but in the mountainous country which I inhabit, it is well known that an ascent of some hours carries the traveller from the climate of Languedoc to that of Norway, and a general theory has been introduced that under the line an elevation of 2400 *toises* is equivalent to the cold of the polar circle (Remond, Observations sur les Voyages de Coxe dans la Suisse, tom. ii. p. 104).

[129] The identity or proximity of the Chalybians, or Chaldæans, may be investigated in Strabo (l. xii. p. 825, 826 [c. 3, § 19 *sqq.*]), Cellarius (Geograph. Antiq. tom. ii. p. 202-204), and Fréret (Mém. de l'Académie, tom. iv. p. 594). Xenophon supposes, in his romance (Cyropæd. l. iii. [c. 3]), the same Barbarians against whom he had fought in his retreat (Anabasis, l. iv. [c. 2]).

[130] Procopius, Persic. l. i. c. 15. De Ædific. l. iii. c. 6.

[131] Ni Taurus obstet in nostra maria venturus (Pomponius Mela, iii. 8). Pliny, a poet as well as a naturalist (v. 20), personifies the river and mountain, and describes their combat. See the course of the Tigris and Euphrates, in the excellent treatise of d'Anville.

ducting deep mines, and of raising platforms to the level of the rampart; he shook the strongest battlements with his military engines, and sometimes advanced to the assault with a line of moveable turrets on the backs of elephants. In the great cities of the East, the disadvantage of space, perhaps of position, was compensated by the zeal of the people, who seconded the garrison in the defence of their country and religion; and the fabulous promise of the Son of God, that Edessa should never be taken, filled the citizens with valiant confidence, and chilled the besiegers with doubt and dismay.[132] The subordinate towns of Armenia and Mesopotamia were diligently strengthened, and the posts which appeared to have any command of ground or water were occupied by numerous forts, substantially built of stone, or more hastily erected with the obvious materials of earth and brick. The eye of Justinian investigated every spot; and his cruel precautions might attract the war into some lonely vale, whose peaceful natives, connected by trade and marriage, were ignorant of national discord and the quarrels of princes. Westward of the Euphrates, a sandy desert extends above six hundred miles to the Red Sea. Nature had interposed a vacant solitude between the ambition of two rival empires; the Arabians, till Mahomet arose, were formidable only as robbers; and, in the proud security of peace, the fortifications of Syria were neglected on the most vulnerable side.

Death of Perozes, king of Persia, A.D. 488

But the national enmity, at least the effects of that enmity, had been suspended by a truce, which continued above fourscore years. An ambassador from the emperor Zeno accompanied the rash and unfortunate Perozes, in his expedition against the Nepthalites or white Huns, whose conquests had been stretched from the Caspian to the heart of India, whose throne was enriched with emeralds,[133] and whose cavalry was supported by

[132] Procopius (Persic. l. ii. c. 12) tells the story with a tone half sceptical, half superstitious, of Herodotus. The promise was not in the primitive lie of Eusebius, but dates at least from the year 400; and a third lie, the *Veronica*, was soon raised on the two former (Evagrius, l. iv. c. 27). As Edessa *has* been taken, Tillemont *must* disclaim the promise (Mém. Ecclés. tom. i. p. 362, 383, 617).

[133] They were purchased from the merchants of Adulis who traded to India (Cosmas, Topograph. Christ. l. xi. p. 339); yet, in the estimate of precious stones, the Scythian emerald was the first, the Bactrian the second, the Æthiopian only the third (Hill's Theophrastus, p. 61, &c. 92). The production, mines, &c. of emeralds, are involved in darkness; and it is doubtful whether we possess any of the twelve sorts known to the ancients (Goguet, Origine des Loix, &c. part ii. l. ii. c. 2, art. 3). In this war the Huns got, or at least Perozes lost, the finest pearl in the world, of which Procopius relates a ridiculous fable.

a line of two thousand elephants.[134] The Persians were twice circumvented, in a situation which made valour useless and flight impossible; and the double victory of the Huns was achieved by military stratagem. They dismissed their royal captive after he had submitted to adore the majesty of a Barbarian; and the humiliation was poorly evaded by the casuistical subtilty of the Magi, who instructed Perozes to direct his attention to the rising sun. The indignant successor of Cyrus forgot his danger and his gratitude: he renewed the attack with headstrong fury, and lost both his army and his [A.D. 448] life.[135] The death of Perozes abandoned Persia to her foreign and domestic enemies; and twelve years of confusion elapsed before his son Cabades or Kobad could embrace any designs of The Persian war. A.D. 502-505 ambition or revenge. The unkind parsimony of Anastasius was the motive or pretence of a Roman war;[136] the Huns and Arabs marched under the Persian standard; and the fortifications of Armenia and Mesopotamia were at that time in a ruinous or imperfect condition. The emperor returned his thanks to the governor and people of Martyropolis for the prompt surrender of a city which could not be successfully defended, and the conflagration of Theodosiopolis might justify the conduct of their [Aug., A.D. 502] prudent neighbours. Amida sustained a long and destructive siege: at the end of three months the loss of fifty thousand of

[134] The Indo-Scythæ continued to reign from the time of Augustus (Dionys. Perieget. 1088, with the Commentary of Eustathius, in Hudson, Geograph. Minor. tom. iv.) to that of the elder Justin (Cosmas, Topograph. Christ. l. xi. p. 338, 339). On their origin and conquests, see d'Anville (sur l'Inde, p. 18, 45, &c. 69, 85, 89). In the second century they were masters of Larice or Guzerat.

[135] See the fate of Phirouz or Perozes, and its consequences, in Procopius (Persic. l. i. c. 3-6), who may be compared with the fragments of Oriental history (d'Herbelot, Bibliot. Orient. p. 351, and Texeria, History of Persia, translated or abridged by Stevens, l. i. c. 32, p. 132-138). The chronology is ably ascertained by Asseman (Bibliot. Orient. tom. iii. p. 396-427). [The death of Perozes occurred soon after the total eclipse of the sun on Jan. 14, 484. His successor Balāsh reigned to 488; and Cobad's first year was counted from July 22, 488. See Nöldeke, Gesch. der Perser, &c. p. 425-7.]

[136] The Persian war, under the reigns of Anastasius and Justin, may be collected from Procopius (Persic. l. i. c. 7, 8, 9), Theophanes (in Chronograph. p. 124-127), Evagrius (l. iii. c. 37), Marcellinus (in Chron. p. 47), and Josua Stylites apud Asseman. (tom. i. p. 272-281). [Josua Stylites (ed. Wright, see App. 1) describes, with considerable detail, the two sieges of Amida, (1) by the Persians (Oct. 502-Jan. 503), and (2) by the Romans, under "Patricius" and Hypatius (503), and the siege of Edessa (504-5). He relates a defeat sustained by Patricius at Opadnâ (=al-Fudain, acc. to Nöldeke, on the river Chaboras) in A.D. 503; and an unsuccessful attempt of Cobad to take Constantina. The Continuator of Zacharias of Mytilene gives an account of the war and also describes at length the first siege of Amida. The account in Evagrius is taken from Eustathius of Epiphania. On the character of Cobad, cp. Nöldeke (Gesch. der Perser, &c. p. 143), who concludes that he was energetic and able.]

the soldiers of Cabades was not balanced by any prospect of success, and it was in vain that the Magi deduced a flattering prediction from the indecency of the women on the ramparts, who had revealed their most secret charms to the eyes of the assailants. At length, in a silent night, they ascended the most [Jan., A.D. 503] accessible tower, which was guarded only by some monks, oppressed, after the duties of a festival, with sleep and wine. Scaling-ladders were applied at the dawn of day; the presence of Cabades, his stern command, and his drawn sword, compelled the Persians to vanquish; and, before it was sheathed, fourscore thousand of the inhabitants had expiated the blood of their companions. After the siege of Amida, the war continued three years, and the unhappy frontier tasted the full measure of its calamities. The gold of Anastasius was offered too late; the number of his troops was defeated by the number of their generals; the country was stripped of its inhabitants; and both the living and the dead were abandoned to the wild beasts of the desert. The resistance of Edessa, and the deficiency of [Siege of Edessa. A.D. 504-5] spoil, inclined the mind of Cabades to peace; he sold his conquests for an exorbitant price; and the same line, though marked with slaughter and devastation, still separated the two empires. To avert the repetition of the same evils, Anastasius resolved to form a new colony, so strong that it should defy the power of the Persian, so far advanced towards Assyria that its stationary troops might defend the province by the menace or operation of offensive war. For this purpose, the town of Fortifications of Dara Dara,[137] fourteen miles from Nisibis, and four days' journey from the Tigris, was peopled and adorned; the hasty works of Anastasius were improved by the perseverance of Justinian; and, without insisting on places less important, the fortifications of Dara may represent the military architecture of the age. The city was surrounded with two walls, and the interval between them, of fifty paces, afforded a retreat to the cattle of the besieged. The inner wall was a monument of strength and beauty: it measured sixty feet from the ground, and the height of the towers was one hundred feet; the loop-holes, from whence an enemy might be annoyed with missile weapons, were small, but numerous; the soldiers were planted along the rampart,

[137] The description of Dara is amply and correctly given by Procopius (Persic. l. i. c. 10; l. ii. c. 13. De Ædific. l. ii. c. 1, 2, 3; l. iii. c. 5). See the situation in d'Anville (l'Euphrate et le Tigre, p. 53, 54, 55), though he seems to double the interval between Dara and Nisibis. [For the founding of Dara see Contin. of Zacharias Myt., c. 11 (ap. Mai, Scr. Vet. Coll., vol. x.).]

under the shelter of double galleries; and a third platform, spacious and secure, was raised on the summit of the towers. The exterior wall appears to have been less lofty, but more solid; and each tower was protected by a quadrangular bulwark. A hard rocky soil resisted the tools of the miners, and on the south-east, where the ground was more tractable, their approach was retarded by a new work, which advanced in the shape of an half-moon. The double and treble ditches were filled with a stream of water; and in the management of the river the most skilful labour was employed to supply the inhabitants, to distress the besiegers, and to prevent the mischiefs of a natural or artificial inundation. Dara continued more than sixty years to fulfil the wishes of its founders, and to provoke the jealousy of the Persians, who incessantly complained that this impregnable fortress had been constructed in manifest violation of the treaty of peace between the two empires.

The Caspian or Iberian gates

Between the Euxine and the Caspian, the countries of Colchos, Iberia, and Albania are intersected in every direction by the branches of Mount Caucasus; and the two principal *gates* or passes from north to south have been frequently confounded in the geography both of the ancients and moderns. The name of *Caspian* or *Albanian* gates is properly applied to Derbend,[138] which occupies a short declivity between the mountains and the sea; the city, if we give credit to local tradition, had been founded by the Greeks; and this dangerous entrance was fortified by the kings of Persia with a mole, double walls, and doors of iron. The *Iberian* gates[139] are formed by a narrow passage of six miles in Mount Caucasus, which opens from the northern side of Iberia or Georgia into the plain that reaches to the Tanais and the Volga. A fortress, designed by Alexander, perhaps, or one of his successors, to command that important pass, had descended by right of conquest or inheritance to a prince of the Huns, who offered it for a moderate price to the emperor; but, while Anastasius paused, while he timorously computed the cost and the distance, a more vigilant rival interposed, and Cabades

[138] For the city and pass of Derbend, see d'Herbelot (Bibliot. Orient. p. 157, 291, 807), Petit de la Croix (Hist. de Gengiscan, l. iv. c. 9), Histoire Généalogique des Tatars (tom. i. p. 120), Olearius (Voyage en Perse, p. 1039-1041), and Corneille le Bruyn (Voyages, tom. i. p. 146, 147): his view may be compared with the plan of Olearius, who judges the wall to be of shells and gravel hardened by time. [Cf. Ritter, Erdkunde, p. 261.]

[139] Procopius, though with some confusion, always denominates them Caspian (Persic. l. i. c. 10). The pass is now styled Tatartopa, the Tartar-gates (d'Anville, Géographie Ancienne, tom. ii. p. 119, 120). [In B. G. iv. 3, Procopius distinguishes the pass of Τζοὺρ (Armen. *Cor*) from the "Caspian Gates".]

forcibly occupied the straits of Caucasus. The Albanian and Iberian gates excluded the horsemen of Scythia from the shorter and most practicable roads, and the whole front of the mountains was covered by the rampart of Gog and Magog, the long wall which has excited the curiosity of an Arabian caliph[140] and a Russian conqueror.[141] According to a recent description, huge stones seven feet thick, twenty-one feet in length or height, are artificially joined without iron or cement, to compose a wall which runs above three hundred miles from the shores of Derbend, over the hills and through the valleys of Daghestan and Georgia. Without a vision, such a work might be undertaken by the policy of Cabades; without a miracle, it might be accomplished by his son, so formidable to the Romans under the name of Chosroes, so dear to the Orientals under the appellation of Nushirwan. The Persian monarch held in his hand the keys both of peace and war; but he stipulated, in every treaty, that Justinian should contribute to the expense of a common barrier, which equally protected the two empires from the inroads of the Scythians.[142]

VII. Justinian suppressed the schools of Athens and the consulship of Rome, which had given so many sages and heroes to mankind. Both these institutions had long since degenerated from their primitive glory; yet some reproach may be justly inflicted on the avarice and jealousy of a prince by whose hands such venerable ruins were destroyed.

The schools of Athens

Athens, after her Persian triumphs, adopted the philosophy of Ionia and the rhetoric of Sicily; and these studies became the patrimony of a city whose inhabitants, about thirty thousand males, condensed, within the period of a single life, the genius of ages and millions. Our sense of the dignity of human nature is exalted by the simple recollection that Isocrates[143] was the

[140] The imaginary rampart of Gog and Magog, which was seriously explored and believed by a caliph of the ixth century, appears to be derived from the gates of Mount Caucasus, and a vague report of the wall of China (Geograph. Nubiensis, p. 267-270. Mémoires de l'Académie, tom. xxxi. p. 210-219).

[141] See a learned dissertation of Baier, *de muro Caucaseo*, in Comment. Acad. Petropol. ann. 1726, tom. i. p. 425-463; but it is destitute of a map or plan. When the czar Peter I. became master of Derbend in the year 1722, the measure of the wall was found to be 3285 Russian *orgyiæ*, or fathom, each of seven feet English; in the whole somewhat more than four miles in length.

[142] See the fortifications and treaties of Chosroes or Nushirwan, in Procopius (Persic. l. i. c. 16, 22; l. ii.) and d'Herbelot (p. 682).

[143] The life of Isocrates extends from Olymp. lxxxvi. 1, to cx. 3 (ante Christ. 436-338). See Dionys. Halicarn. tom. ii. p. 149, 150, edit. Hudson; Plutarch (sive anonymus), in Vit. X. Oratorum, p. 1538-1543, edit. H. Steph.; Phot. cod. cclix. p. 1453.

panion of Plato and Xenophon; that he assisted, perhaps ith the historian Thucydides, at the first representations of the Oedipus of Sophocles and the Iphigenia of Euripides; and that his pupils Æschines and Demosthenes contended for the crown of patriotism in the presence of Aristotle, the master of Theophrastus, who taught at Athens with the founders of the Stoic and Epicurean sects.[144] The ingenuous youth of Attica enjoyed the benefits of their domestic education, which was communicated without envy to the rival cities. Two thousand disciples heard the lessons of Theophrastus;[145] the schools of rhetoric must have been still more populous than those of philosophy; and a rapid succession of students diffused the fame of their teachers as far as the utmost limits of the Grecian language and name. Those limits were enlarged by the victories of Alexander; the arts of Athens survived her freedom and dominion; and the Greek colonies which the Macedonians planted in Egypt, and scattered over Asia, undertook long and frequent pilgrimages to worship the Muses in their favourite temple on the banks of the Ilissus. The Latin conquerors respectfully listened to the instructions of their subjects and captives; the names of Cicero and Horace were enrolled in the schools of Athens; and, after the perfect settlement of the Roman empire, the natives of Italy, of Africa, and of Britain, conversed in the groves of the academy with their fellow-students of the East. The studies of philosophy and eloquence are congenial to a popular state, which encourages the freedom of inquiry and submits only to the force of persuasion. In the republics of Greece and Rome, the art of speaking was the powerful engine of patriotism or ambition; and the schools of rhetoric poured forth a colony of statesmen and legislators. When the liberty of public debate was suppressed, the orator, in the honourable profession of an advocate, might plead the cause of innocence and justice; he might abuse his talents in the more profitable trade of panegyric; and the same precepts continued to dictate the fanciful declamations of the sophist and the chaster beauties of historical composition. The systems which professed to unfold the nature of God, of man,

[144] The schools of Athens are copiously though concisely represented in the Fortuna Attica of Meursius (c. viii. p. 59-73 in tom. i. Opp.). For the state and arts of the city, see the first book of Pausanias, and a small tract of Dicæarchus (in the second volume of Hudson's Geographers), who wrote about Olymp. cxvii. (Dodwell's Dissertat. sect. 4). [For the last age of the schools see a good account in Hertzberg, Geschichte Griechenlands, i. p. 71 *sqq.* Paparrigopulos, Ἱστορία τοῦ Ἑλληνικοῦ ἔθνους, 3. p. 202. Gregorovius, Gesch. der Stadt Athen, i. 54.]

[145] Diogen. Laert. de Vit. Philosoph. l. v. segm. 37, p. 289.

and of the universe, entertained the curiosity of the philosophic student; and, according to the temper of his mind, he might doubt with the sceptics or decide with the stoics, sublimely speculate with Plato or severely argue with Aristotle. The pride of the adverse sects had fixed an unattainable term of moral happiness and perfection; but the race was glorious and salutary; the disciples of Zeno, and even those of Epicurus, were taught both to act and to suffer; and the death of Petronius was not less effectual than that of Seneca to humble a tyrant by the discovery of his impotence. The light of science could not indeed be confined within the walls of Athens. Her incomparable writers address themselves to the human race; the living masters emigrated to Italy and Asia; Berytus, in later times, was devoted to the study of the law; astronomy and physic were cultivated in the museum of Alexandria; but the Attic schools of rhetoric and philosophy maintained their superior reputation from the Peloponnesian war to the reign of Justinian. Athens, though situate in a barren soil, possessed a pure air, a free navigation, and the monuments of ancient art. That sacred retirement was seldom disturbed by the business of trade or government; and the last of the Athenians were distinguished by their lively wit, the purity of their taste and language, their social manners, and some traces, at least in discourse, of the magnanimity of their fathers. In the suburbs of the city, the *academy* of the Platonists, the *lyceum* of the Peripatetics, the *portico* of the Stoics, and the *garden* of the Epicureans, were planted with trees and decorated with statues; and the philosophers, instead of being immured in a cloister, delivered their instructions in spacious and pleasant walks, which at different hours were consecrated to the exercises of the mind and body. The genius of the founders still lived in those venerable seats; the ambition of succeeding to the masters of human reason excited a generous emulation; and the merit of the candidates was determined, on each vacancy, by the free voices of an enlightened people. The Athenian professors were paid by their disciples; according to their mutual wants and abilities, the price appears to have varied from a mina to a talent; and Isocrates himself, who derides the avarice of the sophists, required in his school of rhetoric about thirty pounds from each of his hundred pupils. The wages of industry are just and honourable, yet the same Isocrates shed tears at the first receipt of a stipend; the Stoic might blush when he was hired to preach the contempt of money; and I should be sorry to discover that Aristotle or Plato so far degenerated from the example of

Socrates, as to exchange knowledge for gold. But some property of lands and houses was settled by the permission of the laws, and the legacies of deceased friends, on the philosophic chairs of Athens. Epicurus bequeathed to his disciples the gardens which he had purchased for eighty minæ or two hundred and fifty pounds, with a fund sufficient for their frugal subsistence and monthly festivals;[146] and the patrimony of Plato afforded an annual rent, which, in eight centuries, was gradually increased from three to one thousand pieces of gold.[147] The schools of Athens were protected by the wisest and most virtuous of the Roman princes. The library which Hadrian founded was placed in a portico adorned with pictures, statues, and a roof of alabaster, and supported by one hundred columns of Phrygian marble. The public salaries were assigned by the generous spirit of the Antonines; and each professor, of politics, of rhetoric, of the Platonic, the Peripatetic, the Stoic, and the Epicurean philosophy, received an annual stipend of ten thousand drachmæ, or more than three hundred pounds sterling.[148] After the death of Marcus, these liberal donations, and the privileges attached to the *thrones* of science, were abolished and revived, diminished and enlarged; but some vestige of royal bounty may be found under the successors of Constantine; and their arbitrary choice of an unworthy candidate might tempt the philosophers of Athens to regret the days of independence and poverty.[149] It is remarkable that the impartial favour of the Antonines was bestowed on the four adverse sects of philosophy, which they considered as equally useful, or at least as equally innocent. Socrates had formerly been the glory and the reproach of his country; and the first lessons of Epicurus so strangely scandalized the pious ears of the Athenians that by his exile, and that of his antagonists, they silenced all vain disputes concerning the nature of the gods. But in the ensuing year they recalled the

[146] See the testament of Epicurus in Diogen. Laert. l. x. segm. 16-20, p. 611, 612 [c. 1]. A single epistle (ad Familiares, xiii. 1) displays the injustice of the Areopagus, the fidelity of the Epicureans, the dexterous politeness of Cicero, and the mixture of contempt and esteem with which the Roman senators considered the philosophy and philosophers of Greece.

[147] Damascius, in Vit. Isidor. apud Photium, cod. ccxlii. p. 1054.

[148] See Lucian (in Eunuch. tom. ii. p. 350-359, edit. Reitz), Philostratus (in Vit. Sophist. l. ii. c. 2), and Dion Cassius, or Xiphilin (l. lxxi. p. 1195 [c. 31]), with their editors Du Soul, Olearius, and Reimar, and, above all, Salmasius (ad Hist. August. p. 72). A judicious philosopher (Smith's Wealth of Nations, vol. ii. p. 340-374) prefers the free contributions of the students to a fixed stipend for the professor.

[149] Brucker, Hist. Crit. Philosoph. tom. ii. p. 310, &c.

hasty decree, restored the liberty of the schools, and were convinced, by the experience of ages, that the moral character of philosophers is not affected by the diversity of their theological speculations.[150]

They are suppressed by Justinian

The Gothic arms were less fatal to the schools of Athens than the establishment of a new religion, whose ministers superseded the exercise of reason, resolved every question by an article of faith, and condemned the infidel or sceptic to eternal flames. In many a volume of laborious controversy, they exposed the weakness of the understanding and the corruption of the heart, insulted human nature in the sages of antiquity, and proscribed the spirit of philosophical inquiry, so repugnant to the doctrine, or at least to the temper, of an humble believer. The surviving sect of the Platonists, whom Plato would have blushed to acknowledge, extravagantly mingled a sublime theory with the practice of superstition and magic; and, as they remained alone in the midst of a Christian world, they indulged a secret rancour against the government of the church and state, whose severity was still suspended over their heads. About a century after the reign of Julian,[151] Proclus[152] was permitted to teach in the philosophic chair of the academy, and such was his industry that he frequently, in the same day, pronounced five lessons and composed seven hundred lines. His sagacious mind explored the deepest questions of morals and metaphysics, and he ventured to urge eighteen arguments against the Christian doctrine of the creation of the world. But in the intervals of study he *personally* conversed with Pan, Æsculapius, and Minerva, in whose mysteries he was secretly initiated, and whose prostrate statues he adored; in the devout persuasion that the philosopher, who is a citizen of the universe, should be

Proclus

[150] The birth of Epicurus is fixed to the year 342 before Christ (Bayle), Olympiad cix. 3; and he opened his school at Athens, Olymp. cxviii. 3, 306 years before the same æra. This intolerant law (Athenæus, l. xiii. p. 610. Diogen. Laertius, l. v. s. 38, p. 290 [c. 2]. Julius Pollux, ix. 5) was enacted in the same, or the succeeding, year (Sigonius, Opp. tom. v. p. 62. Menagius, ad Diogen. Laert. p. 204. Corsini, Fasti Attici, tom. iv. p. 67, 68). Theophrastus, chief of the Peripatetics, and disciple of Aristotle, was involved in the same exile.

[151] This is no fanciful æra: the Pagans reckoned their calamities from the reign of their hero. Proclus, whose nativity is marked by his horoscope (A.D. 412, February 8, at C.P.), died 124 years ἀπὸ Ἰουλιανοῦ βασιλείας, A.D. 485 (Marin. in Vitâ Procli, c. 36).

[152] The life of Proclus, by Marinus, was published by Fabricius (Hamburg, 1700, et ad calcem Bibliot. Latin. Lond. 1703). See Suidas (tom. iii. p. 185, 186), Fabricius (Bibliot. Græc, l. v. c. 26, p. 449-552), and Brucker (Hist. Crit. Philosoph. tom. ii. p. 319-326). [The *Vita Procli*, edited by Boissonade, is published in the Didot series along with Diogenes Laertius, etc.]

the priest of its various deities. An eclipse of the sun announced his approaching end; and his life, with that of his scholar Isidore,[153] compiled by two of their most learned disciples, exhibits a deplorable picture of the second childhood of human reason. Yet the golden chain, as it was fondly styled, of the Platonic succession, continued forty-four years from the death of Proclus to the edict of Justinian,[154] which imposed a perpetual silence on the schools of Athens, and excited the grief and indignation of the few remaining votaries of Grecian science and superstition. Seven friends and philosophers, Diogenes and Hermias, Eulalius and Priscian, Damascius, Isidore, and Simplicius, who dissented from the religion of their sovereign, embraced the resolution of seeking, in a foreign land, the freedom which was denied in their native country. They had heard, and they credulously believed, that the republic of Plato was realized in the despotic government of Persia, and that a patriotic king reigned over the happiest and most virtuous of nations. They were soon astonished by the natural discovery

His successors. A.D. 485-529

[153] The life of Isidore was composed by Damascius (apud Photium, cod. ccxlii. p. 1028-1076). See the last age of the Pagan Philosophers in Brucker (tom. ii. p. 341-351).

[154] The suppression of the schools of Athens is recorded by John Malala (tom. ii. p. 187, sub Decio Cos. Sol.), and an anonymous Chronicle in the Vatican library (apud Aleman. p. 106). [The suppression of the schools by Justinian has been unsuccessfully called in question by Paparrigopulos and Gregorovius (*locc. citt.*). The authority of Malalas is good for the reign of Justinian (see Appendix 1). His words are: (Justinian) θεσπίσας πρόσταξιν ἔπεμψεν ἐν Ἀθήναις κελεύσας μηδένα διδάσκειν φιλοσοφίαν μήτε νόμιμα ἐξηγεῖσθαι κ.τ.λ. (p. 449, ed. Bonn). Justinian had already taken stringent measures against pagans (*id.* p. 447, and Procopius, Anecd. c. 11). It is not difficult to guess what happened. The edicts against paganism, strictly interpreted, involved the cessation of Neoplatonic propagandism at Athens. The schools went on as before, and in a month or two the proconsul of Achaia would communicate with the Emperor on the subject and ask his pleasure. The πρόσταξις mentioned by Malalas was the rescript to the proconsul. At the same time the closing of the schools was ensured by withdrawing the revenue, as we may infer from Procopius, Anecd. c. 26, ἀλλὰ καὶ τοὺς ἰατροὺς τε καὶ διδασκάλους τῶν ἐλευθερίων τῶν ἀναγκαίων στερεῖσθαι πεποιηκε. τάς τε γὰρ σιτήσεις ἃς οἱ πρότερον βεβασιλευκότες ἐκ τοῦ δημοσίου χορηγεῖσθαι τούτοις δὴ τοῖς ἐπιτηδεύμασιν ἔταξαν, ταύτας δὴ οὗτος ἀφεῖλετο πάσας. It should be observed that the teaching of law was expressly forbidden. The study of jurisprudence was to be limited to the schools of Constantinople and Berytus. The statement of Malalas that Justinian sent his Code, A.D. 529, to Athens and Berytus, is remarkable, and has been used, by Gregorovius to throw doubt on the other statement of Malalas, by Hertzberg to support it. We may grant Gregorovius that there was no solemn formal abolition of the schools, but there is no reason to question that they were directly and suddenly suppressed through a rescript to the proconsul. The matter is noticed by Krumbacher, Gesch. der byz. Litteratur (ed. 2), p. 6, and Gelzer, *id.* p. 940, who rightly says, "Justinian confiscated the property of the Platonic Academy, and forbade at the University of Athens teaching in philosophy and law".]

that Persia resembled the other countries of the globe; that Chosroes, who affected the name of a philosopher, was vain, cruel, and ambitious; that bigotry, and a spirit of intolerance, prevailed among the Magi; that the nobles were haughty, the courtiers servile, and the magistrates unjust; that the guilty sometimes escaped, and that the innocent were often oppressed. The disappointment of the philosophers provoked them to overlook the real virtues of the Persians; and they were scandalized, more deeply perhaps than became their profession, with the plurality of wives and concubines, the incestuous marriages, and the custom of exposing dead bodies to the dogs and vultures, instead of hiding them in the earth or consuming them with fire. Their repentance was expressed by a precipitate return, and they loudly declared that they had rather die on the borders of the empire than enjoy the wealth and favour of the Barbarian. From this journey, however, they derived a benefit which reflects the purest lustre on the character of Chosroes. He required that the seven sages who had visited the court of Persia should be exempted from the penal laws which Justinian enacted against his Pagan subjects; and this privilege, expressly stipulated in a treaty of peace, was guarded by the vigilance of a powerful mediator.[155] Simplicius and his companions ended their lives in peace and obscurity; and, as they left no disciples, they terminate the long list of Grecian philosophers, who may be justly praised, notwithstanding their defects, as the wisest and most virtuous of their contemporaries. The writings of Simplicius are now extant. His physical and metaphysical commentaries on Aristotle have passed away with the fashion of the times; but his moral interpretation of Epictetus is preserved in the library of nations, as a classic book, most excellently adapted to direct the will, to purify the heart, and to confirm the understanding, by a just confidence in the nature both of God and man.

The last of the philosophers

About the same time that Pythagoras first invented the appellation of philosopher, liberty and the consulship were founded at Rome by the elder Brutus. The revolutions of the consular office, which may be viewed in the successive lights of a substance, a shadow, and a name, have been occasionally mentioned in the present history. The first magistrates of the republic had

The Roman consulship extinguished by Justinian. A.D. 541

[155] Agathias (l. ii. p. 69, 70, 71) relates this curious story. Chosroes ascended the throne in the year 531, and made his first peace with the Romans in the beginning of 533, a date most compatible with his *young* fame and the *old* age of Isidore (Asseman. Bibliot. Orient. tom. iii. p. 404. Pagi, tom. ii. p. 543, 550).

been chosen by the people, to exercise, in the senate and in the camp, the powers of peace and war, which were afterwards translated to the emperors. But the tradition of ancient dignity was long revered by the Romans and Barbarians. A Gothic historian applauds the consulship of Theodoric as the height of all temporal glory and greatness;[156] the king of Italy himself congratulates those annual favourites of fortune who, without the cares, enjoyed the splendour of the throne; and at the end of a thousand years two consuls were created by the sovereigns of Rome and Constantinople, for the sole purpose of giving a date to the year and a festival to the people. But the expenses of this festival, in which the wealthy and the vain aspired to surpass their predecessors, insensibly arose to the enormous sum of fourscore thousand pounds; the wisest senators declined an useless honour, which involved the certain ruin of their families; and to this reluctance I should impute the frequent chasms in the last age of the consular *Fasti*. The predecessors of Justinian had assisted from the public treasures the dignity of the less opulent candidates; the avarice of that prince preferred the cheaper and more convenient method of advice and regulation.[157] Seven *processions* or spectacles were the number to which his edict confined the horse and chariot races, the athletic sports, the music and pantomimes of the theatre, and the hunting of wild beasts; and small pieces of silver were discreetly substituted to the gold medals, which had always excited tumult and drunkenness, when they were scattered with a profuse hand among the populace. Notwithstanding these precautions and his own example, the succession of consuls finally ceased in the thirteenth year of Justinian, whose despotic temper might be gratified by the silent extinction of a title which admonished the Romans of their ancient freedom.[158] Yet the annual consulship still lived in the minds of the people; they fondly expected its speedy restoration; they applauded the gracious condescension of successive princes, by whom it was assumed in the first year of their reign; and three centuries elapsed,

[156] Cassiodor. Variarum Epist. vi. 1. Jornandes, c. 57, p. 696, edit. Grot. Quod summum bonum primumque in mundo decus edicitur.

[157] See the regulations of Justinian (Novell. cv.), dated at Constantinople, July 5, and addressed to Strategius, treasurer of the empire. [Nov. 81, ed. Zach.]

[158] Procopius, in Anecdot. c. 26. Aleman. p. 106. In the xviiith year after the consulship of Basilius, according to the reckoning of Marcellinus, Victor, Marius, &c. the secret history was composed [but see Appendix 1], and, in the eyes of Procopius, the consulship was finally abolished.

after the death of Justinian, before that obsolete dignity, which had been suppressed by custom, could be abolished by law.[159] The imperfect mode of distinguishing each year by the name of a magistrate was usefully supplied by the date of a permanent æra: the creation of the world, according to the septuagint version, was adopted by the Greeks;[160] and the Latins, since the age of Charlemagne, have computed their time from the birth of Christ.[161]

[159] By Leo the philosopher (Novell. xciv. A.D. 886-911). [Zachariä von L., Jus Græco-Romanum, iii. p. 191.] See Pagi (Dissertat. Hypatica, p. 325-362), and Ducange (Gloss. Græc. p. 1635, 1636). Even the title was vilified; consulatus codicilli . . . vilescunt, says the emperor himself.

[160] According to Julius Africanus, &c. the world was created the first of September, 5508 years, three months, and twenty-five days before the birth of Christ (see Pezron, Antiquité des Tems deféndue, p. 20-28); and this æra has been used by the Greeks, the Oriental Christians, and even by the Russians, till the reign of Peter I. The period, however arbitrary, is clear and convenient. Of the 7296 years which are supposed to elapse since the creation, we shall find 3000 of ignorance and darkness; 2000 either fabulous or doubtful; 1000 of ancient history, commencing with the Persian empire, and the republics of Rome and Athens; 1000 from the fall of the Roman empire in the west to the discovery of America; and the remaining 296 will almost complete three centuries of the modern state of Europe and mankind. I regret this chronology, so far preferable to our double and perplexed method of counting backwards and forwards the years before and after the Christian æra. [See above, vol. ii., Appendix 4.]

[161] The æra of the world has prevailed in the East since the vith general council (A.D. 681). In the West the Christian æra was first invented in the vith century; was propagated in the viiith by the authority and writings of venerable Bede; it it was not till the xth that the use became legal and popular. See l'Art de rifier les Dates, Dissert. Préliminaire, p. iii. xii. Dictionnaire Diplomatique, m. i. p. 329-337: the works of a laborious society of Benedictine monks.

CHAPTER XLI

Conquests of Justinian in the West—Character and first Campaigns of Belisarius—He invades and subdues the Vandal Kingdom of Africa—His Triumph—The Gothic War—He recovers Sicily, Naples, and Rome—Siege of Rome by the Goths—Their Retreat and Losses—Surrender of Ravenna—Glory of Belisarius—His domestic Shame and Misfortunes

Justinian resolves to invade Africa. A.D. 533

WHEN Justinian ascended the throne, about fifty years after the fall of the Western empire, the kingdom of the Goths and Vandals had obtained a solid and, as it might seem, a legal establishment both in Europe and Africa. The titles which Roman victory had inscribed were erazed with equal justice by the sword of the Barbarians; and their successful rapine derived a more venerable sanction from time, from treaties, and from the oaths of fidelity, already repeated by a second or third generation of obedient subjects. Experience and Christianity had refuted the superstitious hope that Rome was founded by the gods to reign for ever over the nations of the earth. But the proud claim of perpetual and indefeasible dominion, which her soldiers could no longer maintain, was firmly asserted by her statesmen and lawyers, whose opinions have been sometimes revived and propagated in the modern schools of jurisprudence. After Rome herself had been stripped of the Imperial purple, the princes of Constantinople assumed the sole and sacred sceptre of the monarchy; demanded, as their rightful inheritance, the provinces which had been subdued by the consuls or possessed by the Cæsars; and feebly aspired to deliver their faithful subjects of the West from the usurpation of heretics and Barbarians. The execution of this splendid design was in some degree reserved for Justinian. During the five first years of his reign, he reluctantly waged a costly and unprofitable war against the Persians; till his pride submitted to his ambition, and he purchased, at the price of four hundred and forty thousand pounds sterling, the benefit of a precarious truce, which, in the language of both nations, was dignified with the

appellation of the *endless* peace. The safety of the East enabled the emperor to employ his forces against the Vandals; and the internal state of Africa afforded an honourable motive, and promised a powerful support, to the Roman arms.[1]

State of the Vandals. Hilderic. A.D. 523-530

According to the testament of the founder, the African kingdom had lineally descended to Hilderic the eldest of the Vandal princes. A mild disposition inclined the son of a tyrant, the grandson of a conqueror, to prefer the counsels of clemency and peace; and his accession was marked by the salutary edict which restored two hundred bishops to their churches and allowed the free profession of the Athanasian creed.[2] But the Catholics accepted with cold and transient gratitude a favour so inadequate to their pretensions, and the virtues of Hilderic offended the prejudices of his countrymen. The Arian clergy presumed to insinuate that he had renounced the faith, and the soldiers more loudly complained that he had degenerated from the courage, of his ancestors. His ambassadors were suspected of a secret and disgraceful negotiation in the Byzantine court; and his general, the Achilles,[3] as he was named, of the Vandals, lost a battle [Hoamer] against the naked and disorderly Moors. The public discontent Gelimer. A.D. 530-534 was exasperated by Gelimer,[4] whose age, descent, and military fame gave him an apparent title to the succession; he assumed, with the consent of the nation, the reins of government; and his unfortunate sovereign sunk without a struggle from the throne to a dungeon, where he was strictly guarded with a faithful [June 531] counsellor and his unpopular nephew, the Achilles of the Vandals. But the indulgence which Hilderic had shewn to his Catholic

[1] The complete series of the Vandal war is related by Procopius in a regular and elegant narrative (l. i. c. 9-25; l. ii. c. 1-13); and happy would be my lot, could I always tread in the footsteps of such a guide. From the entire and diligent perusal of the Greek text, I have a right to pronounce that the Latin and French versions of Grotius and Cousin may not be implicitly trusted; yet the president Cousin has been often praised, and Hugo Grotius was the first scholar of a learned age.

[2] See Ruinart, Hist. Persecut. Vandal. c. xii. p. 589. His best evidence is drawn from the life of St. Fulgentius, composed by one of his disciples, transcribed in a great measure in the annals of Baronius, and printed in several great collections (Catalog. Bibliot. Bunaviænæ, tom. i. vol. ii. p. 1258).

[3] For what quality of the mind or body? For speed, or beauty, or valour?—In what language did the Vandals read Homer?—Did he speak German?—The Latins had four versions (Fabric. tom. i. l. ii. c. 3, p. 297); yet, in spite of the praises of Seneca (Consol. c. 26), they appear to have been more successful in imitating, than in translating, the Greek poets. But the name of Achilles might be famous and popular, even among the illiterate Barbarians. [The Moorish leader in the battle, which led to the fall of Hilderic, was Antāla, chief of the Frexenses, a Moorish tribe of Byzacium. See Corippus, Johannis, 3, 184 *sqq.*]

[4] [The true form of the name is Geilimir.]

subjects had powerfully recommended him to the favour of Justinian, who, for the benefit of his own sect, could acknowledge the use and justice of religious toleration; their alliance, while the nephew of Justin remained in a private station, was cemented by the mutual exchange of gifts and letters; and the emperor Justinian asserted the cause of royalty and friendship. In two successive embassies, he admonished the usurper to repent of his treason, or to abstain, at least, from any further violence, which might provoke the displeasure of God and of the Romans; to reverence the laws of kindred and succession; and to suffer an infirm old man peaceably to end his days either on the throne of Carthage or in the palace of Constantinople. The passions or even the prudence of Gelimer compelled him to reject these requests, which were urged in the haughty tone of menace and command; and he justified his ambition in a language rarely spoken in the Byzantine court, by alleging the right of a free people to remove or punish their chief magistrate, who had failed in the execution of the kingly office.[5] After this fruitless expostulation, the captive monarch was more rigorously treated, his nephew was deprived of his eyes, and the cruel Vandal, confident in his strength and distance, derided the vain threats and slow preparations of the emperor of the East. Justinian resolved to deliver or revenge his friend, Gelimer to maintain his usurpation; and the war was preceded, according to the practice of civilized nations, by the most solemn protestations that each party was sincerely desirous of peace.

Debates on the African war

The report of an African war was grateful only to the vain and idle populace of Constantinople, whose poverty exempted them from tribute, and whose cowardice was seldom exposed to military service. But the wiser citizens, who judged of the future by the past, revolved in their memory the immense loss both of men and money, which the empire had sustained in the expedition of Basiliscus. The troops, which, after five laborious campaigns, had been recalled from the Persian frontier, dreaded the sea, the climate, and the arms of an unknown enemy. The ministers of the finances computed, as far as they might compute, the demands of an African war; the taxes which must be found and levied to supply those insatiate demands; and the danger lest their own lives, or at least their lucrative employments, should be made responsible for the deficiency of the supply. Inspired by such

[5] [In his letter Gelimer styled himself *basileus*, a title exclusively used by the emperor.]

selfish motives (for we may not suspect him of any zeal for the public good), John of Cappadocia ventured to oppose in full council the inclinations of his master. He confessed that a victory of such importance could not be too dearly purchased; but he represented in a grave discourse the certain difficulties and the uncertain event. "You undertake," said the præfect, "to besiege Carthage by land, the distance is not less than one hundred and forty days' journey; on the sea, a whole year[6] must elapse before you can receive any intelligence from your fleet. If Africa should be reduced, it cannot be preserved without the additional conquest of Sicily and Italy. Success will impose the obligation of new labours; a single misfortune will attract the Barbarians into the heart of your exhausted empire." Justinian felt the weight of this salutary advice; he was confounded by the unwonted freedom of an obsequious servant; and the design of the war would perhaps have been relinquished, if his courage had not been revived by a voice which silenced the doubts of profane reason. "I have seen a vision," cried an artful or fanatic bishop of the East. "It is the will of heaven, O emperor! that you should not abandon your holy enterprise for the deliverance of the African church. The God of battles will march before your standard, and disperse your enemies, who are the enemies of his Son." The emperor might be tempted, and his counsellors were constrained, to give credit to this seasonable revelation; but they derived more rational hope from the revolt which the adherents of Hilderic or Athanasius had already excited on the borders of the Vandal monarchy. Pudentius, an African subject, had privately signified his loyal intentions, and a small military aid restored the province of Tripoli to the obedience of the Romans. The government of Sardinia had been entrusted to Godas, a valiant Barbarian; he suspended the payment of tribute, disclaimed his allegiance to the usurper, and gave audience to the emissaries of Justinian, who found him master of that fruitful island, at the head of his guards, and proudly invested with the ensigns of royalty. The forces of the Vandals were diminished by discord and suspicion; the Roman armies were animated by the spirit of Belisarius: one of those heroic names which are familiar to every age and to every nation.

Character and choice of Belisarius

The Africanus of new Rome was born, and perhaps educated,

[6] *A year*—absurd exaggeration! The conquest of Africa may be dated A.D. 533, September 14: it is celebrated by Justinian in the preface to his Institutes, which were published November 21, of the same year. Including the voyage and return, such a computation might be truly applied to *our* Indian empire.

among the Thracian peasants,[7] without any of those advantages which had formed the virtues of the elder and the younger Scipio: a noble origin, liberal studies, and the emulation of a free state. The silence of a loquacious secretary may be admitted to prove that the youth of Belisarius could not afford any subject of praise: he served, most assuredly with valour and reputation, among the private guards of Justinian; and, when his patron became emperor, the domestic was promoted to military command. After a bold inroad into Persarmenia, in which his glory was shared by a colleague and his progress was checked by an enemy, Belisarius repaired to the important station of Dara, where he first accepted the service of Procopius, the faithful companion, and diligent historian, of his exploits.[8]

His services in the Persian war. A.D. 529-532

The Mirranes[9] of Persia advanced, with forty thousand of her best troops, to raze the fortifications of Dara; and signified the day and the hour on which the citizens should prepare a bath for his refreshment after the toils of victory. He encountered an adversary equal to himself, by the new title of General of the East:[10] his superior in the science of war, but much inferior in the number and quality of his troops, which amounted only to twenty-five thousand Romans and strangers, relaxed in their discipline, and humbled by recent disasters. As the level plain of Dara refused all shelter to stratagem and ambush, Belisarius protected his front with a deep trench, which was prolonged at first in perpendicular and afterwards in parallel lines, to cover the wings of cavalry advantageously posted to command the flanks and rear of the enemy.[11] When the Roman centre was shaken, their well-timed and rapid charge decided the conflict: the standard of Persia fell; the *immortals* fled; the infantry threw away their bucklers; and eight thousand of the vanquished were left on the field of battle. In the next campaign, Syria

[A.D. 530]

[7] Ὥρμητο δὲ ὁ Βελισάριος ἐκ Γερμανίας, ἢ Θρᾳκων τε καὶ Ἰλλυρίων μεταξὺ κεῖται (Procop. Vandal. l. i. c. 11). Aleman. (Not. ad Anecdot. p. 5), an Italian, could easily reject the German vanity of Giphanius and Velserus, who wished to claim the hero; but his Germania, a metropolis of Thrace, I cannot find in any civil or ecclesiastical lists of the provinces and cities. [Γερμάνη, near Sardica, is mentioned by Proc., de Æd. 4, 1; Γερμάη, obviously the same place, by Hierocles, under Dacia Medit. p. 14, ed. Burckhardt (Γερμανός in Const. Porph. iii. 56).]

[8] The two first Persian campaigns of Belisarius are fairly and copiously related by his secretary (Persic. l. i. c. 12-18).

[9] [Mihrān is the name, not of an office, but of a family. Cp. Theophylactus Simoc., 3, 18, and Nöldeke, Gesch. der Perser, &c. p. 139.]

[10] [No new title, but that of Mag. Mil. per Orientem; but about this time a new command was introduced, that of Mag. Militum in Armenia, and was conferred on Sittas, who married the Empress Theodora's sister.]

[11] [For a diagram of this battle see Bury, Later Roman Empire, i. p. 375.]

was invaded on the side of the desert: and Belisarius, with twenty [A.D. 531] thousand men, hastened from Dara to the relief of the province. During the whole summer, the designs of the enemy were baffled by his skilful dispositions: he pressed their retreat, occupied each night their camp of the preceding day, and would have secured a bloodless victory if he could have resisted the impatience of his own troops. Their valiant promise was faintly supported in the hour of battle; the right wing was exposed by the treacherous or cowardly desertion of the Christian Arabs; the Huns, a veteran band of eight hundred warriors, were oppressed by superior numbers; the flight of the Isaurians was intercepted; but the Roman infantry stood firm on the left, for Belisarius himself, dismounting from his horse, shewed them that intrepid despair was their only safety. They turned their backs to the Euphrates, and their faces to the enemy; innumerable arrows glanced without effect from the compact and shelving order of their bucklers; an impenetrable line of pikes was opposed to the repeated assaults of the Persian cavalry; and, after a resistance of many hours, the remaining troops were skilfully embarked under the shadow of the night. The Persian commander retired with disorder and disgrace, to answer a strict account of the lives of so many soldiers which he had consumed in a barren victory. But the fame of Belisarius was not sullied by a defeat, in which he alone had saved his army from the consequences of their own rashness;[12] the approach of peace relieved him from the guard of the eastern frontier, and his conduct in the sedition of Constantinople amply discharged his obligations to the emperor. When the African war became the topic of popular discourse and secret deliberation, each of the Roman generals was apprehensive, rather than ambitious, of the dangerous honour; but, as soon as Justinian had declared his preference of superior merit, their envy was rekindled by the unanimous applause which was given to the choice of Belisarius. The temper of the Byzantine court may encourage a suspicion that the hero was darkly assisted by the intrigues of his wife, the fair and subtle Antonina, who alternately enjoyed the confidence, and incurred the hatred, of the empress Theodora. The birth of Antonina was ignoble, she descended from a family of charioteers; and her chastity has been stained with the foulest reproach. Yet she reigned with long and absolute power over the mind of

[12] [This is the account of Procopius; but John Malalas, who is very full here, lays the blame on Belisarius.]

her illustrious husband; and, if Antonina disdained the merit of conjugal fidelity, she expressed a manly friendship to Belisarius, whom she accompanied with undaunted resolution in all the hardships and dangers of a military life.[13]

Preparations for the African war. A.D. 533

The preparations for the African war were not unworthy of the last contest between Rome and Carthage. The pride and flower of the army consisted of the guards of Belisarius, who according to the pernicious indulgence of the times, devoted themselves by a particular oath of fidelity to the service of their patrons. Their strength and stature, for which they had been curiously selected, the goodness of their horses and armour, and the assiduous practice of all the exercises of war, enabled them to act whatever their courage might prompt; and their courage was exalted by the social honour of their rank and the personal ambition of favour and fortune. Four hundred of the bravest of the Heruli marched under the banner of the faithful and active Pharas; their untractable valour was more highly prized than the tame submission of the Greeks and Syrians; and of such importance was it deemed to procure a reinforcement of six hundred Massagetæ, or Huns, that they were allured by fraud and deceit to engage in a naval expedition. Five thousand horse and ten thousand foot were embarked at Constantinople for the conquest of Africa, but the infantry, for the most part levied in Thrace and Isauria, yielded to the more prevailing use and reputation of the cavalry; and the Scythian bow was the weapon on which the armies of Rome were now reduced to place their principal dependence. From a laudable desire to assert the dignity of his theme, Procopius defends the soldiers of his own time against the morose critics who confined that respectable name to the heavy-armed warriors of antiquity and maliciously observed that the word *archer* is introduced by Homer[14] as a term of contempt. "Such contempt might, perhaps, be due to the naked youths who appeared on foot in the fields of Troy, and, lurking behind a tomb-stone, or the shield of a friend, drew the bow-string to their breast,[15] and dismissed a feeble and lifeless

[13] See the birth and character of Antonina, in the Anecdotes, c. 1, and the notes of Alemannus, p. 3.

[14] See the preface of Procopius. The enemies of archery might quote the reproaches of Diomede (Iliad, A. 385, &c.) and the permittere vulnera ventis of Lucan (viii. 384); yet the Romans could not despise the arrows of the Parthians; and in the siege of Troy Pandarus, Paris, and Teucer pierced those haughty warriors who insulted them as women or children.

[15] Νευρὴν μὲν μαζῷ πέλασεν, τόξῳ δὲ σιδηρον (Iliad, Δ. 123). How concise—how just—how beautiful is the whole picture! I see the attitudes of the archer—I hear the twanging of the bow.

λίγξε βιὸς, νευρὴ δὲ μέγ' ἴαχεν, ἆλτο δ' ὀϊστός.

arrow. But our archers (pursues the historian), are mounted on horses, which they manage with admirable skill; their head and shoulders are protected by a cask or buckler; they wear greaves of iron on their legs, and their bodies are guarded by a coat of mail. On their right side hangs a quiver, a sword on their left, and their hand is accustomed to wield a lance or javelin in closer combat. Their bows are strong and weighty; they shoot in every possible direction, advancing, retreating, to the front, to the rear, or to either flank; and, as they are taught to draw the bow-string not to the breast, but to the right ear, firm, indeed, must be the armour that can resist the rapid violence of their shaft." Five hundred transports, navigated by twenty thousand mariners of Egypt, Cilicia, and Ionia, were collected in the harbour of Constantinople. The smallest of these vessels may be computed at thirty, the largest at five hundred, tons; and the fair average will supply an allowance, liberal but not profuse, of about one hundred thousand tons,[16] for the reception of thirty-five thousand soldiers and sailors, of five thousand horses, of arms, engines, and military stores, and of a sufficient stock of water and provisions for a voyage, perhaps, of three months. The proud galleys, which in former ages swept the Mediterranean with so many hundred oars, had long since disappeared; and the fleet of Justinian was escorted only by ninety-two light brigantines, covered from the missile weapons of the enemy, and rowed by two thousand of the brave and robust youth of Constantinople. Twenty-two generals are named, most of whom were afterwards distinguished in the wars of Africa and Italy; but the supreme command, both by land and sea, was delegated to Belisarius alone, with a boundless power of acting according to his discretion as if the emperor himself were present. The separation of the naval and military professions is at once the effect and the cause of the modern improvements in the science of navigation and maritime war.

Departure of the fleet. A.D. 533, June

In the seventh year of the reign of Justinian, and about the time of the summer solstice, the whole fleet of six hundred

[16] The text appears to allow for the largest vessels 50,000 medimni, or 3000 tons (since the *medimnus* weighed 160 Roman, or 120 avoirdupois, pounds). I have given a more rational interpretation, by supposing that the Attic style of Procopius conceals the legal and popular *modius*, a sixth part of the *medimnus* (Hooper's Ancient measures, p. 152, &c.). A contrary, and indeed a stranger, mistake has crept into an oration of Dinarchus (contra Demosthenem, in Reiske Orator. Græc. tom. iv. P. ii. p. 34). By reducing the *number* of ships from 500 to 50, and translating μεδιμνοι by *mines*, or pounds, Cousin has generously allowed 500 tons for the whole of the Imperial fleet!—Did he never think? [Mr. Hodgkin calculates the longest vessel at 750, the smallest at 45, tons.]

ships was ranged in martial pomp before the gardens of the palace. The patriarch pronounced his benediction, the emperor signified his last commands, the general's trumpet gave the signal of departure, and every heart, according to its fears or wishes, explored with anxious curiosity the omens of misfortune and success. The first halt was made at Perinthus or Heraclea, where Belisarius waited five days to receive some Thracian horses, a military gift of his sovereign. From thence the fleet pursued their course through the midst of the Propontis; but, as they struggled to pass the straits of the Hellespont, an unfavourable wind detained them four days at Abydus, where the general exhibited a memorable lesson of firmness and severity. Two of the Huns, who in a drunken quarrel had slain one of their fellow-soldiers, were instantly shewn to the army suspended on a lofty gibbet. The national indignity was resented by their countrymen, who disclaimed the servile laws of the empire, and asserted the free privilege of Scythia, where a small fine was allowed to expiate the hasty sallies of intemperance and anger. Their complaints were specious, their clamours were loud, and the Romans were not averse to the example of disorder and impunity. But the rising sedition was appeased by the authority and eloquence of the general; and he represented to the assembled troops the obligation of justice, the importance of discipline, the rewards of piety and virtue, and the unpardonable guilt of murder, which, in his apprehension, was aggravated rather than excused by the vice of intoxication.[17] In the navigation from the Hellespont to Peloponnesus, which the Greeks, after the siege of Troy, had performed in four days,[18] the fleet of Belisarius was guided in their course by his master-galley, conspicuous in the day by the redness of the sails, and in the night by the torches blazing from the mast-head. It was the duty of the pilots, as they steered between the islands, and turned the capes of Malea and Tænarum, to preserve the just order and regular intervals of such a multitude of ships; as the wind was fair and moderate, their labours were not unsuccessful, and the troops were safely disembarked at

[17] I have read of a Greek legislator who inflicted a *double* penalty on the crimes committed in a state of intoxication; but it seems agreed that this was rather a political than a moral law.

[18] Or even in three days, since they anchored the first evening in the neighbouring isle of Tenedos; the second day they sailed to Lesbos, the third to the promontory of Eubœa, and on the fourth they reached Argos (Homer, Odyss. r. 130-183. Wood's Essay on Homer, p. 40-46). A pirate sailed from the Hellespont to the seaport at Sparta in three days (Xenophon, Hellen. l. ii. c. 1).

Methone on the Messenian coast, to repose themselves for a [Modon] while after the fatigues of the sea. In this place they experienced how avarice, invested with authority, may sport with the lives of thousands which are bravely exposed for the public service. According to military practice, the bread or biscuit of the Romans was twice prepared in the oven, and a diminution of one fourth was cheerfully allowed for the loss of weight. To gain this miserable profit, and to save the expense of wood, the præfect John of Cappadocia had given orders that the flour should be slightly baked by the same fire which warmed the baths of Constantinople; and, when the sacks were opened, a soft and mouldy paste was distributed to the army. Such unwholesome food, assisted by the heat of the climate and season, soon produced an epidemical disease, which swept away five hundred soldiers. Their health was restored by the diligence of Belisarius, who provided fresh bread at Methone, and boldly expressed his just and humane indignation; the emperor heard his complaint; the general was praised; but the minister was not punished. From the port of Methone, the pilots steered along the western coast of Peloponnesus, as far as the isle of Zacynthus or Zant, before they undertook the voyage (in their eyes a most arduous voyage) of one hundred leagues over the Ionian sea. As the fleet was surprised by a calm, sixteen days were consumed in the slow navigation; and even the general would have suffered the intolerable hardship of thirst, if the ingenuity of Antonina had not preserved the water in glass bottles, which she buried deep in the sand in a part of the ship impervious to the rays of the sun. At length the harbour of Caucana,[19] on the southern side of Sicily, afforded a secure and hospitable shelter. The Gothic officers who governed the island in the name of the daughter and grandson of Theodoric obeyed their imprudent orders, to receive the troops of Justinian like friends and allies: provisions were liberally supplied, the cavalry was remounted,[20] and Procopius soon returned from Syracuse with correct information of the state and designs of the Vandals. His intelligence determined Belisarius to hasten his operations, and his wise impatience was seconded by the winds. The fleet

[19] Caucana, near Camarina, is at least 50 miles (350 or 400 stadia) from Syracuse (Cluver, Sicilia Antiqua, p. 191). [Caucana is Porto Lombardo. In Walter of Malaterra, iv. 16, it is called *Resacramba*.]

[20] Procopius, Gothic. l. i. c. 3. Tibi tollit hinnitum apta quadrigis equa, in the Sicilian pastures of Grosphus (Horat. Carm. ii. 16). Acragas . . . magnanimûm quondam generator equorum (Virg. Æneid, iii. 704). Thero's horses, whose victories are immortalized by Pindar, were bred in this country.

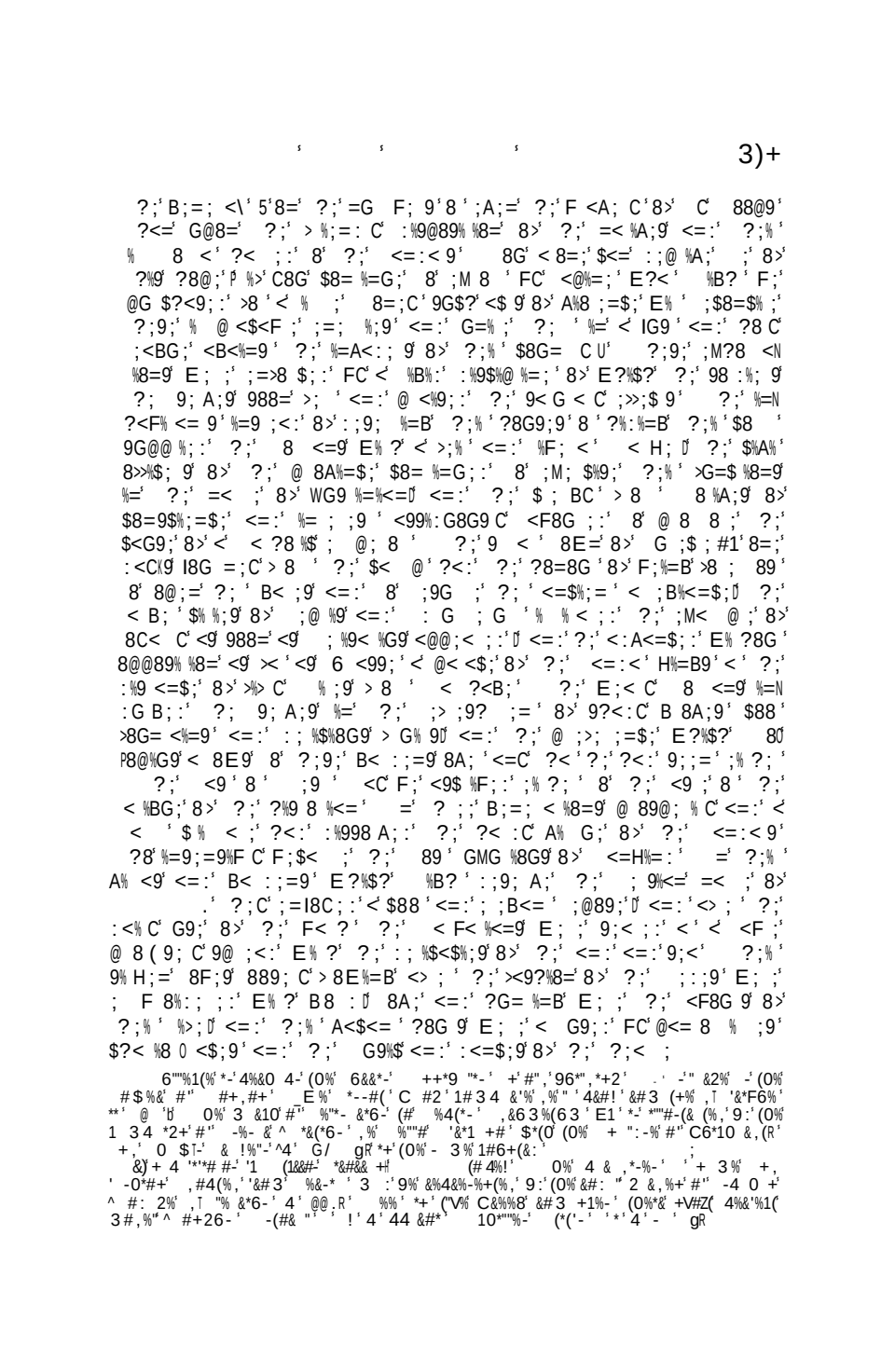
lost sight of Sicily, passed before the isle of Malta, discovered the capes of Africa, ran along the coast with a strong gale from the north-east, and finally cast anchor at the promontory of [Ras Kabudia] Caput Vada, about five days' journey to the south of Carthage.[21]

Belisarius lands on the coast of Africa. September

If Gelimer had been informed of the approach of the enemy, he must have delayed the conquest of Sardinia, for the immediate defence of his person and kingdom. A detachment of five thousand soldiers, and one hundred and twenty galleys, would have joined the remaining forces of the Vandals; and the descendant of Genseric might have surprised and oppressed a fleet of deep-laden transports incapable of action, and of light brigantines that seemed only qualified for flight. Belisarius had secretly trembled when he overheard his soldiers, in the passage, emboldening each other to confess their apprehensions: if they were once on shore, they hoped to maintain the honour of their arms; but, if they should be attacked at sea, they did not blush to acknowledge that they wanted courage to contend at the same time with the winds, the waves, and the Barbarians.[22] The knowledge of their sentiments decided Belisarius to seize the first opportunity of landing them on the coast of Africa, and he prudently rejected, in a council of war, the proposal of sailing with the fleet and army into the port of Carthage. Three months after their departure from Constantinople, the men and horses, the arms and military stores, were safely disembarked, and five soldiers were left as a guard on board each of the ships, which were disposed in the form of a semicircle. The remainder of the troops occupied a camp on the sea-shore, which they fortified, according to ancient discipline, with a ditch and rampart; and the discovery of a source of fresh water, while it allayed the thirst, excited the superstitious confidence, of the Romans. The next morning, some of the neighbouring gardens were pillaged; and Belisarius, after chastising the offenders, embraced the slight occasion, but the decisive moment, of inculcating the maxims of justice, moderation, and genuine policy. "When I first accepted the commission of subduing Africa, I depended much less," said

[21] The Caput Vada of Procopius (where Justinian afterwards founded a city—de Ædific. l. vi. c. 6) is the promontory of Ammon in Strabo, the Brachodes of Ptolemy, the Capaudia of the moderns, a long narrow slip that runs into the sea (Shaw's Travels, p. 111). [The distance of Caput Vada from Carthage was about 175 Roman miles, nine days' march for the army of Belisarius (cp. Tissot, Géogr. de l'Afrique rom., 2, 108 *sqq.*).]

[22] A centurion of Mark Anthony expressed, though in a more manly strain, the same dislike to the sea and to naval combats (Plutarch, in Antonio, p. 1730, edit. Hen. Steph.).



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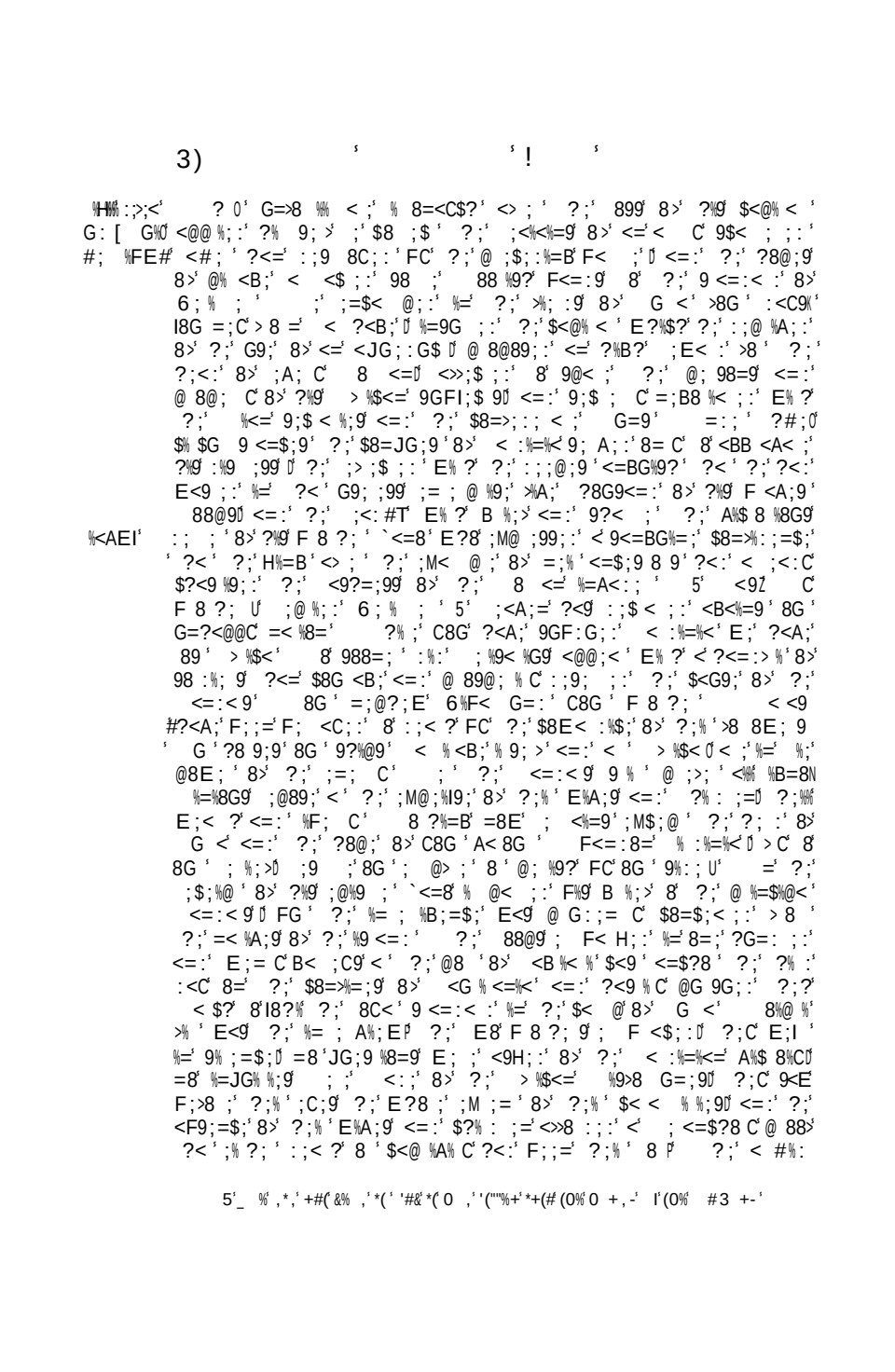

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<=:<ɡʻ E; ;ʻ>8G=:ʻ 8=ʻ ?;ʻ >%; :ʻ 8›ʻ F< ;ʊ 98ʻ %=$8=9%:; <F ;ʻ E<ɡ
?;ʻ $<= B;ʻ 8›ʻ<:Cʻ E?%$?ʼ ;M %=BG%9?;:ʻ<ʻ =< %8=ʻ <=:ʻ <=9>; ;:ʻ
?;ʻ; @% ;ʻ 8›ʻ > %$<ʻ =ʻ ?;ʻ ;A;=%=Bʻ ;%9< %GɡʻE<ɡʻ;:ʻ?%ɡ %=>;=ʻ Cʻ,
8ʻ ?;ʊ < <$Hʻ 8›ʻ ?;ʻ $< @ʻ ʊ <=:ʻ ?;ʻ @G9% <=% 8GɡʻE<ɡʻ>%B?ʻ 8›ʻ
6; % ; ʻ ;M@89;:ʻ ?;ʻ A<=% Cʻ 8›ʻ ?%ɡʻ ;$;= ʻ :;$< < %8=ɡʻ ?< ʻ 8ʻ
?;ʻ A<=JG%9?;:ʻ;ʻ:;< ?ʼ E<ɡʻ<ʻ ; %;›ʻ %›;ʻ<ʻ FG ?;= ʻ <=:ʻ %=>< Cʻ
?;ʻ 8= Cʻ 8FI;$ʻ 8›ʻ ; 8 ʻ %ɡʻ :;@< G ;ʻ E<ɡʻ 9;$; ʊ FG ʻ <ɡʻ
988=ʻ <ɡʻ ?;ʻ <=:<ɡʻ :%9$8A; ;:ʻ ?<ʻ ?;% ʻ H%=Bʻ ?<:ʻ :;9; ;:ʻ
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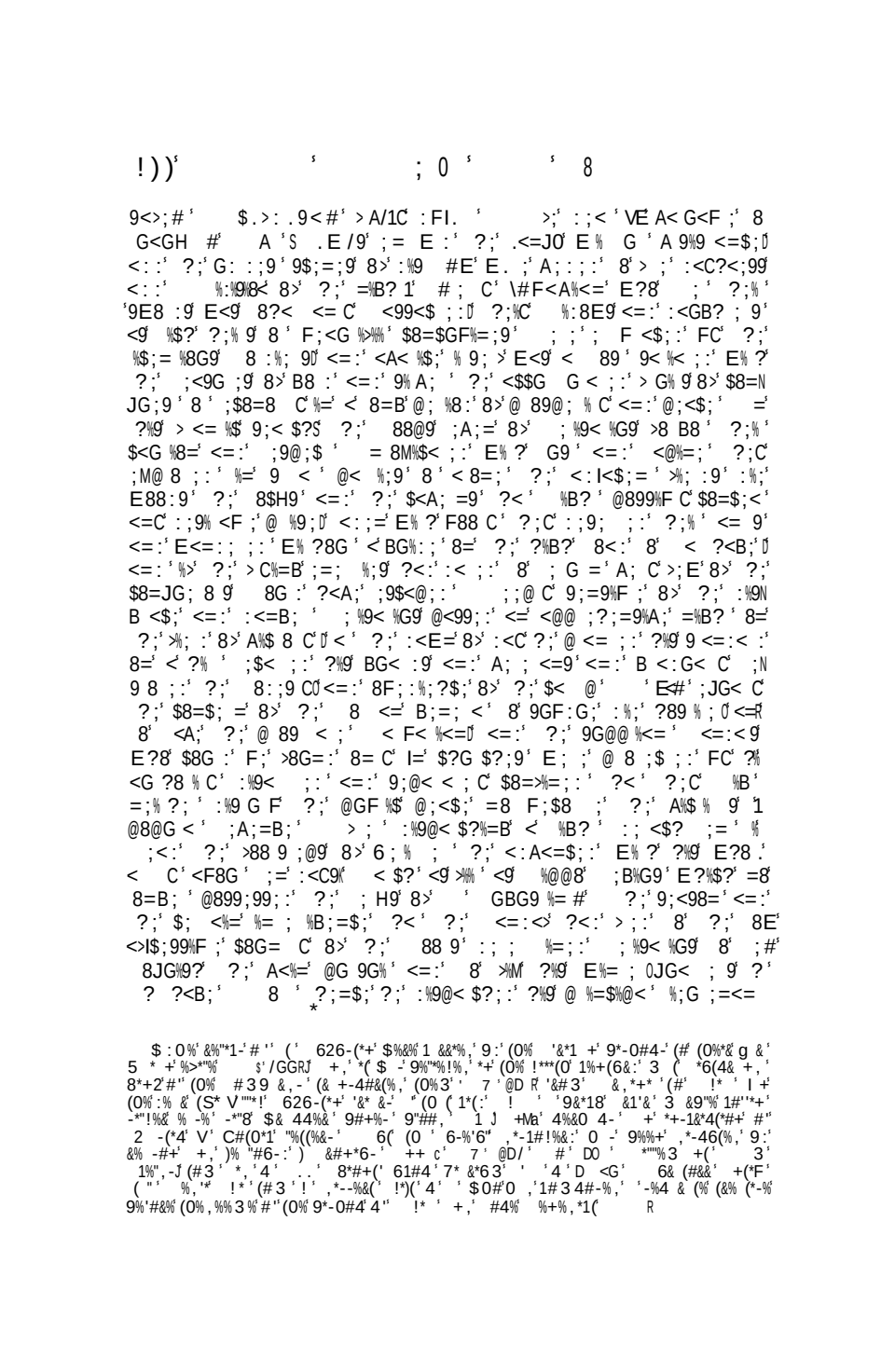

8‘%=>8 ‘ ?;‘ ; @; 8‘ ?<Ó‘%=‘ % ;‘ 9@%E%>;‘ ? ; ;‘ 8=##‘ ?;‘ ?<:‘
<$?%;A; :‘ ?;‘ $8=JG;9‘ 8›‘ > %$?‘
; %9< %G9‘ 9@8H;‘ ?;‘ <=BG<B;‘ 8›‘ %G ?‘ ?;‘9G A%A%=B‘ <=:‘ <9‘1#6* % (“
C%; : ; : ‘ E% ?8G ‘ ;9%9 <=$;‘ ?;%‘< 9‘ <=:‘ ?;%‘ > ; ; : 8 Ó‘ ?;‘
=;%B?F8G ?88:‘ 8›‘ < ?<B;‘9GF % ; :‘ 8‘?%9‘_$;9;=$;Ó <=:‘ ?;‘
8 ;‘ :%9 <= ‘@ 8A%=$;9‘ E ; ;‘ 9G$$;99%A; C‘9GF:G;:‘ FC‘ ?;‘ ;@8 ‘
8›‘?%9‘A%$ 8 C‘ %@8 %‘E<9‘$8=›% ; :‘ %=‘?; ‘A8 G= < C‘< ;B%<=$;D
< :%=%<‘ <=:‘ 8 9%$<‘ 9G ;=:; ; :‘ 8‘ <=‘ 8>%$; ‘ E?8‘ $< %; : ‘ %=N
9 ;<:‘8›‘<‘9E8 :‘ ?;‘?;<:‘8›‘ ?;‘A< %<= ‘ ` <=8‘Ó <=:‘ ?;‘%9 ;9‘8›‘
<I8 $<‘ %=8 $<‘ <=:‘ A%$<‘ $8=9;= ; :‘ 8‘ ; <%=‘ <=‘ ?G F ;‘
<@@;=:<B;‘8›‘?;‘ > %$<=‘H%=B:8 ‘ <;9< ;<‘<‘ 8C<‘: C‘E?%$?‘
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<=:‘ ?;‘ 8<:‘E<9‘%=>;9 ;:‘FC‘ ?;‘ 88 9Ó‘FG‘?;‘9;<‘E<9‘8@;=‘
<=:‘ ?;‘ 8 <=9‘E; ;‘ =8E‘ <9 ; 9‘8›‘?;‘9;<‘ %% <$%A;‘<=:‘
:%9$;;‘ %FG=;‘9<% ;:‘<9‘ >; ‘<9‘ ?;‘‘ <% 9‘E?; ;‘?;‘8$$GN
@%;:‘ ;@ ; ‘8‘ ;G<1%E?%$?‘ %9;9‘8@@89% ;‘ 8‘6%F < <‘8=‘?;‘
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>8 %>%;:‘FC‘WG9 %=%<=Ó <=:‘?;‘9;; 9‘ 8‘?<A;‘%=:G B;:‘ ?;‘A<%=‘‘
<%?F% %8=‘8›‘;M ;=:%=B‘?%9‘ ; @% ;‘ 8‘ ?;‘$@ G%==9‘8›‘ ; $G ;9
;‘ ;$;%A;:‘ ?;‘ ;99;=B; 9‘8›‘A%$ 8 C‘<‘ ?;‘ % ;‘E?;=‘?;‘E<9‘
@ ;@< %=B‘ 8‘@GF %9?‘ ?;‘@<=:;$9‘8›‘?;‘ 8 <=‘<E Ó <=:‘ ?;‘
<;AI8G‘8‘I;<8G9‘ ; @; 8‘$; ;F<;:‘ ?;‘:%A%=;‘B88:=;99‘<=:‘
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@›‘ ?;‘ < ?8 %$ $?G $?‘ ; ‘IG %9:%$ %8=‘E;< ?‘ <=:‘ % N
G=% %;9‘@; ?<@9‘?;‘ 89‘0;99;=%<‘@< ‘8›‘;@%9$8@<‘ ; %B%8=‘
E; ;‘ ;9 8 ;:‘<=:‘< @ %›%;:‘E% ?‘<‘%F; <‘?<=:Ó ?;‘ <=‘E8 N
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<=:‘ ?;‘9C=8:‘8›‘ < ?<B;‘FC‘ ?;‘A8%$;‘8›‘E8‘?G=:;:‘<=:‘
9;A;= ;;=‘F%?8@9 T1‘<@@ <G:;:‘ ?;‘IG9‘ ;<9G ;‘8›‘@%8G9‘ ;<%<0

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--‘ %%‘(0%‘#&*2*+ “ 1(-‘*+‘ &#+*+-‘ ‘ ‘/<‘ #‘D /.R‘I 0%%34%&#& 44“ 6,-‘
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-0764*+‘^C%#2& 40‘ 1& ‘ ‘&*1 + ‘4‘‘*›% ‘,‘ 4* (‘ ((%!R #(#%&!%-‘ +,‘
9%$ *“-‘(0*-‘%4*-144 3‘,%1 :‘ +‘(0% 3#&%‘4&4-4%&#6-‘ #‘‘(0%106&10‘0%‘0 ,‘
+#(*1%,‘ G‘9*-0#4&*1-J 96(‘0#$%!%&‘3*+6(%‘$%&% (0%‘(‘“#%%(‘%-‘ *(‘*-‘+#(‘4&#9 9“%‘
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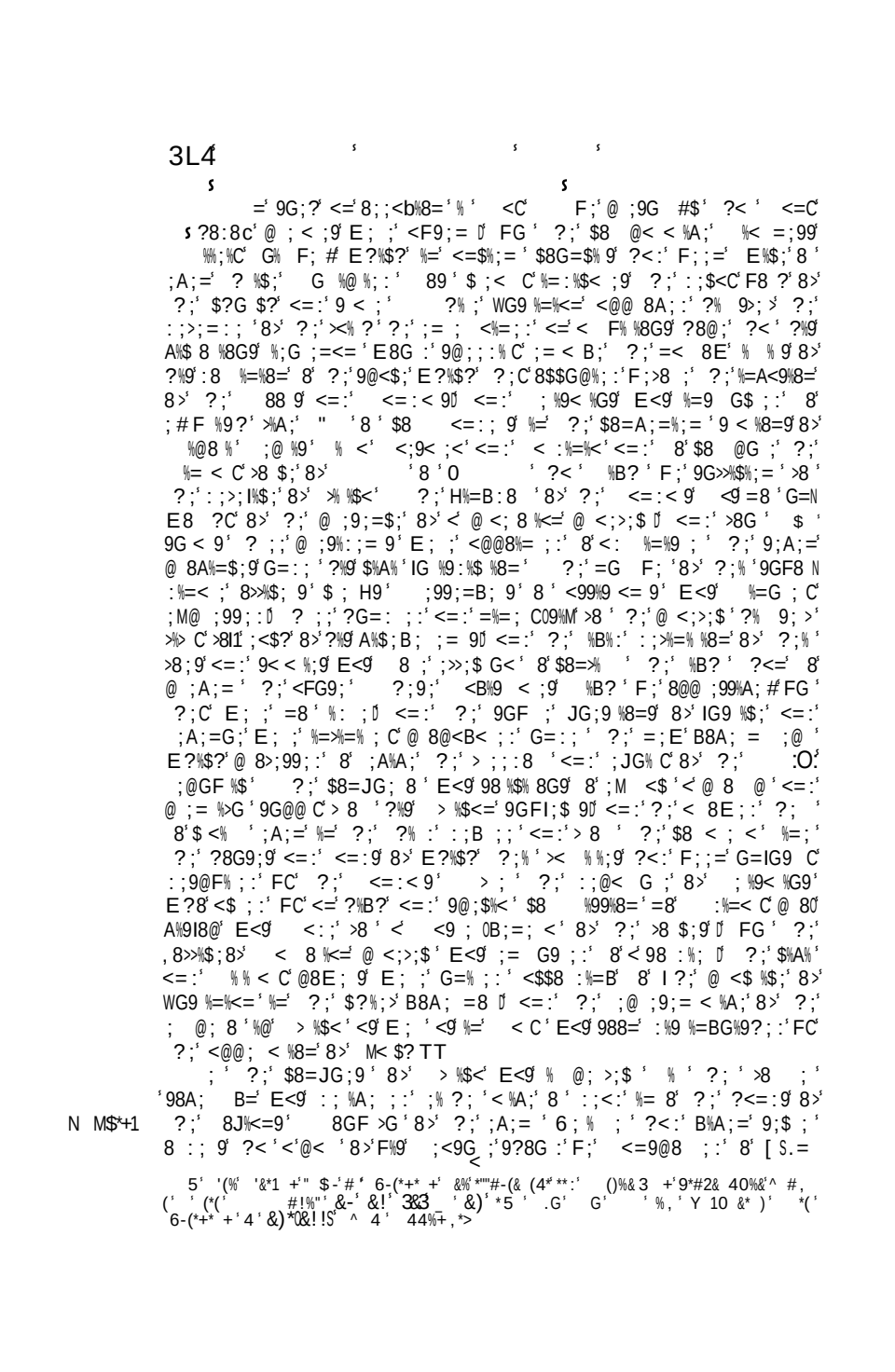
3L4



3 * 3

%;A;' ?<' ;M ; ;' B %;>'?<:' :;@ %A;:' 6;? ; '%.' F%9' 9;=9;9' D FG ' %=' ?%9' 8G =>G' 9 <,' 5:B B%: I" '<:I(& %>%9%==< ;:' 8' 8 ;' %= ; %B;=' 8F9; A; 9' ?<' ?;'A<%=' <=:' <=9% 8 C'9$;=;9' 8>'?G <=' B ;< =;99' < ;' G=E8 ?C 8>'<' 9; %8 9' ?8GB? 1T

?;%' $8= ; @' E<9' 988=' IG9 %>%;:' FC' <' =;E' ;M< @ ;' 8>' <' <; <=G % AG B<' G ?D ?<' >< ; C' <:?; ;9' 8' @8E; ' <=:' ;=AC' 8 # <^' 9G@; %8' ; %' ?;' $?%;>;' 8>' ?;' 8%=<=' < C' @ ;9G ;:' 8' <=G ' ?%=H' ?; 9; A;9' ?;' %A< 9' 8>'<=' ?; 8' ?;%' @ %A< ;' :%9@< $?;9' < %$%8G9 C' <>% ;:' ?<' ?;' $8=JG; 8' 8>' > %$<' 9 8=B' %=' ?%9' ;@G < %8=' <=:' ?;' @GF $' 8A;' $8=9@% ;:' 8' 9;<' ?% 9; >'8=' ?;' ? 8=;' 8>' ?;' <=:<9' WG9 %=%<=' %9 ;=;:' E% ?' 88' @< %;=' ? % ;< D <=:' ?%9' 9% ;=$;' E<9' ?;' ;9G ' 8>'I;<8G9C' < ?;' ?<=' 8>' $8=>%:;=$;' =' ?8=8G <F ;' < ; =< %A;' 8>' ; <%=%=B' %=' ?;' @ 8A%=$;' 8 ' 8>' ; G =%=B' 8' ?;' $<@% < ' E<9' %=:;;:' 9GF % ;:' 8' ?;' :%9$; %8=' 8>' ; %9< %G9D FG ' ?;' E%9; C' $8=$ G:;:' >8 ' %= ; $;@ ;:' ; ; 9' <=:' ?;' H=8E ;:B;' 8>' ?%9' 98A; ;%B=%9' ; @; ' ?<' ?;' G9 ' ;% ?; ' ;9%B=' ?%9' ?;<:' ; ;$' ?%9' 9 <=:<: ' 8 ' $8=N >8G=:' ?%9' ;=; %;9' FC' ?%9' @ ;9;=$;' <=:' 9GF %99%8=' ==8$;=$;' <=:' $8G <B;' :;$%:;:' ?%9' $?8%$;P ?%9' BG< :9' $<@ %A;9' <=:' ;<9G ;9' E; ;' ;%%B;= C' ; F< H;:' D <=:' 98' @ 89@; 8G9' E<9' ?;' =<A%B< %8=' ?<' ?%9' < %A<' <' 8=9 <= %=8@ ;' @ ;$;:;:' <=C' $; <%=' <$$8G=' 8>'?%9' :;@< G ;' > 8 ' ?;' @8 ' 8>' < ?<B;' G$?' G ' #9@;$ %=B' 8C< C' ; 8A;:' ?;' <@@ ;?;=9%8=9' 8>'WG9 %=%<=' D ;=AC' E<9' 9% ;=$;:' <=:' %=> < ;:' FC' ?;' @GF %$' B < % G:;' D <=:' ?;' ?% :' > %$<=G9' 8F <%=;:' ?;' ?8=8G 9' 8>' <' %G @?' <' $; ; 8=C' E?%$?' ?;' $% C' 8>' 8=9 <= %=;' ?<:' =;A;' 9;;=' <=:' E?%$?' <=$%;=' 8 ;' 9%=$;' ?;' ;%B=' 8>' %F; %G9' ?<:' ;9; A;:' >8 ' ?;'

"' < 9' 8>' ?;' <;9< 9#1 8 ' ?;' @< <$;' 8>' ;> 9< %G ' ?;' @ 8$;99%8=' E<9' $8=:G$;:' ? 8GB?' ?;' @ %=$%@<' 9 ;;9' 8 ?;' ?%@@8: 8 ;D <=:' ?%9' ; 8 <F ;' :C' 9;; #' 8' <A;=B;' ?;' %=IG %;9' 8>' 6;=9; %$' <=:' 8' ;M@%< ;' ?;' 9?< ;' 8>' ?;' 8 <=9 ?;' E;< ?' 8>'=< %8=9' E<9' :%9@ <C;:' ?;' 8@?%;9' 8>' < %<' ' %=;>>; %=< ;' GMG C'P %$?' < 8G 'B8 :;=' ? 8=;9'<=:' ?;'$?< %8 9' 8>'9 < ;' E?%$?' ?<:' F;;=' G9;:' FC' ?;' <=:<' JG;;=D ?;' <99C' >G =% G ;' 8>' ?;' 8C<' F<=JG; ' ?;'9@ ;=:8G ' 8>' @ ;$%8G9' 9 8=;9

; 8:8 G9' ; ;B<= C' :;9$ %F;9' ?;' 9 <=B;' ;>>;$ 9' >' B I;>' %=' <=8 ?;' 8C<' $<@ %A;' 9< ;%$?G9' 8>' BI>@ ' E?8' E;@' <' ?;' ;99;' <=:' E<9' % ;=' <' ?;' B ;< ;9' 8>' ?%9' $< < % %;9' R3' %%%' $' 3)S' =' ?;' %= ; A%;E' 8>' <G G ' # % %G9'<=:' ; 9;G9' ; %9< %G9' %B?' 9 G:C' ?%9' @< D' FG ' % ' %9' @ 8F<F ;' ?<' ?;' =;A;' ;<:' ;% ?;' %AC' 8' G < ;?D <=:' % ' %9' $; <%=' ?< ' ?%9' B;=; 89% C' :%:' =8 ' =#;:' <' G 8

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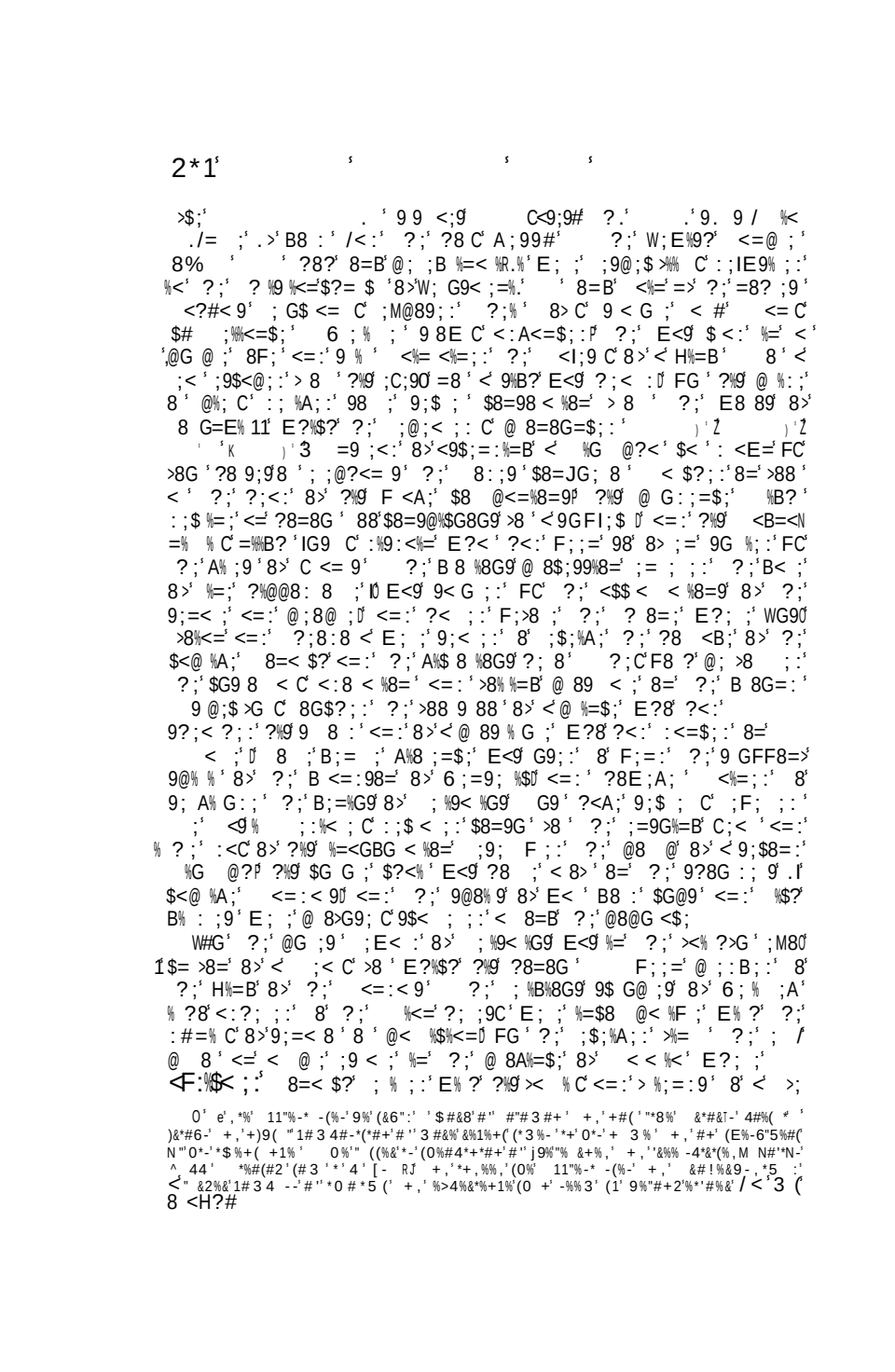
2*1



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C8G?E;%0;:%9 %FG;:%=8>%A;9JG<:8=9 8>$<A<C E?%$?
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>;?;;M%;8>?;%H%=B<=:=8F;9?;9;A%;$8E:%B?
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;@%;%F;$<;?;%@ %98=9 $8G:?;C;=;<%=<=8@;
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@899%F;>8 F<A;;=8;M@89;?;%=<H;:=;99<=:;>;<
F;>8;?;;C;9 8>?;%$8G=%C;=8;:;9$%F;?;H%=B:8 9
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^$0*10'*-'"*8%$*-% !*-*9"%+'(0% +,%-' '' %&6 6''#+'(#3'*+'4'/G.R 3 :' ^
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+-$%:'(0% +, "- "C%& 3 +:J 96((0#'# #'' '&'# ,%+,%,'0*-' 4&6,%+1% +,
''%1(%,'(#',%-4*-%(0% 4#!%&(:'#'(0%*'' '#&%-(-'^ &#1%4'#-' + , "'0'*'%' 2R

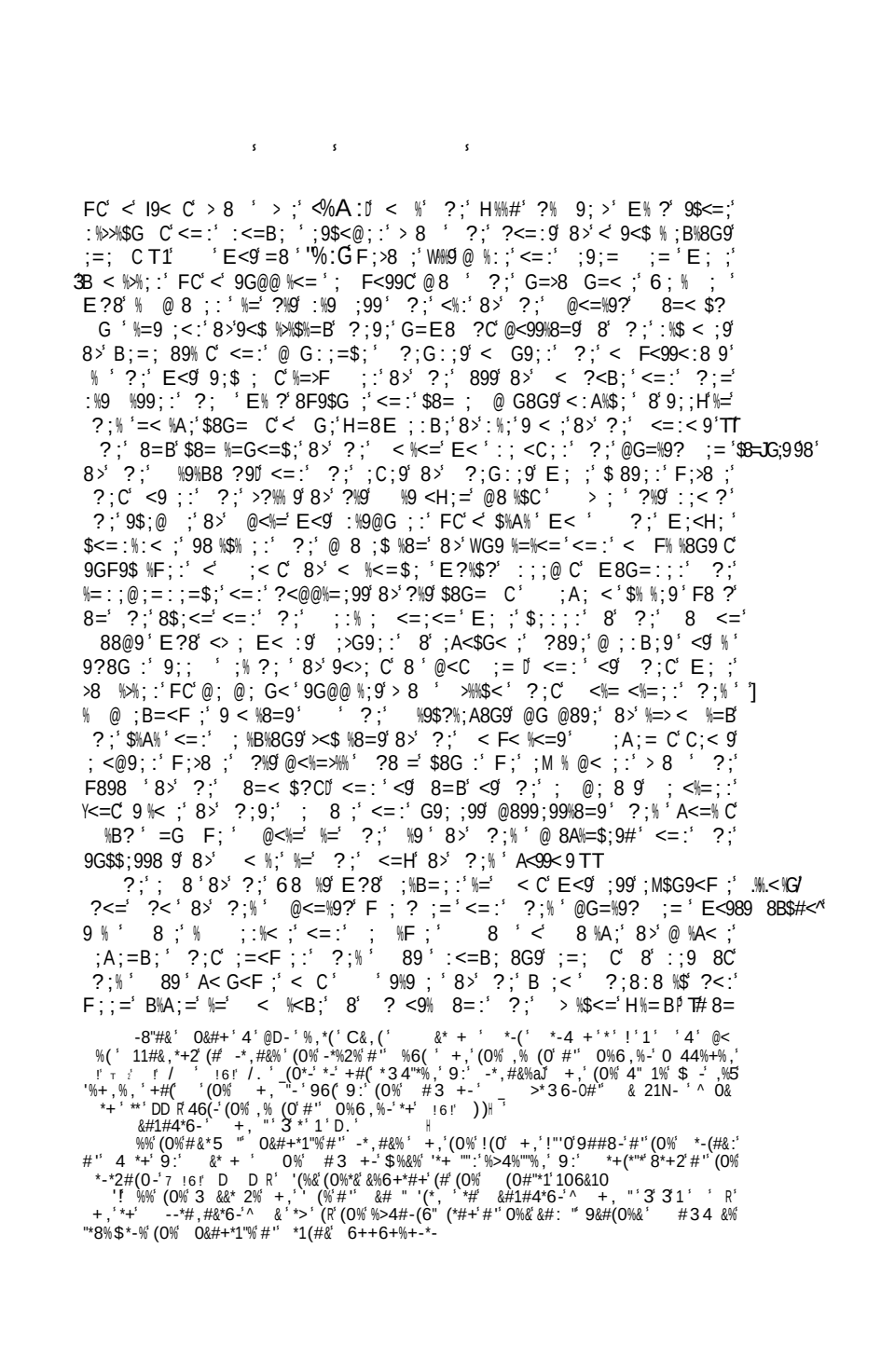
?;C 9 % @ ;9 A ;% ?;% $=9 8 9 <=:? ;@G % C 8> ?;% F 88:I 98_J0$E E% (< .#;X # %;=;? ;< 8= 8 G99%<= C8H;I VI=:9; A;E%% 9;$;<=:A8 G= < C< ;B%<=$;? ;:;9$;=:<= 8> ?;% <=$%;= H%=B9 E?8 %= ?%9 B< F <=: @ ;9;= >8 G=;%9 $8=>8G=:;:E% ?;<=;9 8> ?%9 A<99<9#T ?:=< ;<=:9% G< %8= 8> ?%9 G=?<@@C @;8@ ;%B? %=:%$< ;?;% :;9$;= ?8 8=;$8 8=9 8$H E% ?;$8=VIG; 8 < 8> ? $< G ?;G9;8> < $ < 8=%<=:%< ;$ 8 ;$;< C ;N @ ;9;= 9 ?; B ?;<9 ; =<=8>?;=;E $8 8=%;9 E?8 9G$$;:;:8 ?;B;=G%=;<=:<9 <;:C9$< ;;:8 :;9 8C;:%= ?;<B;8> I $8@ %9## > ;%9< %G9?<:F;;= ; @ ;:8 ?;9% <;%= ?%9 <;B%<=$;?;% %B? ?<A;G B;:;A;= <B<%=9 ?;; @; 8 ?% <;>;?;%=:%9 @;=9<F ;:G C 8> 9<A%=B >% %$< > 8 <=;=; C %8 ;F< F< 8G9 ?<= ?;<=:<9 ?;8 %B%= 8> ?;8 9 %9 %=A8 A;:%=:<HN =;99 ?;C E;;% %B=8 <= 8> ?;G9;8> ; ;9 1T ?;% % % 9 $<==8 F;@ ;$%9;C :;>%=;:F <F8% :;99 $8= %=;= <9 8@;=;:8 ?;% %FC<= 9?;@?;:9 ?;; = B;8> 9;<98=9 <?:@<9 G ;9 ;BG < ;:?;% 8 %8=9 <=:?;% G:;?G 9 <=:9 ;=:;>G =%N G ;E;<=9@8 ;:E% ?;?;9< ;<9;<9 ?;% <9 ;?;% >< % %;9;<=:?;% $< ;E ?%$?;$8=9%9 ;:8>9?;;@;8M;=<=:$< ;9 11 G %=B ?;A%B8G 8>?;8 <=@8E ;?;C 8FN 9;A;:<;9@;$ <F ;:%9 <=$;>8 < ?<B;<=:?;9;<09?8 ;G=:;?;>;;F ;%B=8>?;<=:<9 ?;C %=A<:;:?;$% %;9 8> G %:%< 8$$G@%;:?;9;<0$8<9>8 <%#%;8 <;9< ;<;<=:@% $?;:?;% $< @9 E% ?% @G=% C %= ?:;>; % ;@ 8A%=$;8> CL<$ < ?;>8 %:<F ;9 %B ?<=:< >% $8=:G$ 8> ;%9< %G9 9;$G ;:?;=;G < %C 8> ?;8 8 %9?@ %=$;9 E?89;

A&# 3 (0% 3#6(0 #'(0% 2& (%"%1(#& ^*+ @R # *6- ,%-1&*9%- (0% -%1&%(&#: "(: +,&%9%""*#6-4*&*(#'(0% +, "- #" & +,%+96&2O $0# 1#6",3 6-(%& '*!% #& -*> (0#6- +,-#",%&- $0# 0 ,&#16&%,-#3% 1 ++#+ E1 ^ (*+%& &6+0 3 2 & 4 .D 46, 769#- *-(," $ #+ &10*% A& +Z#*-% (#*0 *' 4 <R 05 !% &1*(: 0#(#'(0% %"%1(#& 96(#" # *6- 0*3-%"3 :)6-("::9% -6-4%1(%, 0% ^ %6(#+*1R +, "- 0 !% #"1#6&-% +#(0*+2(# ,# $*(0 (0% ^ " !#+*1R %+, - 0% 1#+'6-*#+ &#5'&# 3' '16-(#3'#' 3%,* %! "$&*(%&-'(#6-% (#, %-*2+ (% (0% %+, 4 (0% 6-% #' " '"#&(0% [%8"%&-'#" & +-:"! +* b &#1#4*6-'^3 *'1 DDR $ -'*+(#(" , &8+%- +&6$(NN #! I #!#5*'%- ^ *2(*#' +,#'(0% &32+ #"7 2#0%&(# <GR (0% " !#+* +'(&*9%-' #"(0% 4(9 +,'%+%,* "&% ,:9#&,%&%,'#+ 06&*+2* '^"* -1#+ *-(' #"(0% C%&3 +-' <:)V R' Q &" "%-(&%4&%-%+(-'(0% ##&-' -' &%3+ +(#"(0% &3:#" %& 1"%-' ^,% % ' 626&(0'1 D R' +,' &#%#4*6-'^ +, "'3 **'1' GR -'(0% 4#-(%&*(:'#"(0% + +-% +-' $0# '"%,'&#3'(0% &#99%& #-06 '^>))*3+R' % F6#(%-'($#'1#"6 3+-'$*(0' '0%% +*%* +'*+-1&*4(*#+' 9%"*%!%*+'(0% 1#"6 3+-W ,#69((0% *+-1&*4(*#+W +,' &%)%1((0% 4%,*2&%% *&2*" ^C%#&2*1' **' << R +,'4 3 4#+*6-' %" ^*' R ,%-1&*9% (0% $ +,%&*+2 "*'%#"(0% '&*1 +'-0%40%$5'-*3*" &'(# (0 (#"(0% & 9-' +,' &(&-'* +,' 0 $' ^4' DDD *-'(0% 9%-(1#3 3%+((#&'#+'(0% 4#%(+,'(0% 2%#2& 40%&

A<=% C <9@% ; : 8 ;$;%A; %= ?;; @; 8 =< ;? ;;=9%B=9 8>
?;% ;B< ;:%B=% C #; #;C E; ;<9 8=%9?;:FC ?;; <@%:; A;=
<=:; F ;:%=?;@ ;9;=$;8>?;%$8=JG; 8 G ?%9 <@N
@ 8<$?%=B:;@< G ;988= ;%;A;:?;<@@ ;?;=9%8=9 8> < 9<A<B;
<=:9G@; 9%8G9 @;8@ ;? ?;=G F; 8> ?;% E%A;9 < 8E;:
?; 8 :%9 ;B< :?;9<>; C 8> ?;%=><= ?89 <B;9 <=:E?;=
?; 8 <= B;=; <?8%9 ;:9<%=?;@8 8>< ?<B;?;?;<:
?;$ %;9<=:< 89 F;?; :?;>< ;9 8> ?;:;98 <;:@ 8N
A%=$; ;?;@; 9%9 ;:%=?%9 ;98 G %8=? <=: ;<A%=B 8= C <
@< 8>?%9 BG< :9 8 ;%=>8 $;?;>;;F ;B< %98=9?;;= G# :
?;$8 <=:8>> %$< 8?;?G?G$9 8 8 8=T# E?8 @ 8A;:
?% 9;>=8 G=E8 ?C 8 F;?;9G$$;998 8>; %9< %G9 =?;
>% 9 %=A<9%8=98 ;:;<$? ;=9 E% ?E 8 8>>%$; 9 8> ; % E; ;
9G @ %9;:<=:%= ; $;@ ;:FG 8 8 8=9@;;:%C<99; F;:?I9
88@9 < $?;:>8 < ?<B;%= 8 ?;?;< 8> ?;$8G= C
<=:%= E8 B ;< F< ;9 :;9 8C;:9%M C ?8G9<=:8>?;< N
F< %<=9 ?;8 9:;@;=:;:8=?;% G %G:;?;%9E%>=;99
<=:?;%%=<$$;99%F ;8G=<%=9 =:?;<9@;$?<=:9 ;0 >
#;% $< ;9 <;9<%:8?<A;@ 8:G$;:98 ;$8=>%%9%8=%=?;
8 <= $<A< C T# G <9 988= <9 ?;C E;;$8 <=:;:8
:%9 8G= ?;C:;%:;:?%9 $8= ; @ %F ;8F9 <$;0 <9 988= <9
?;$8 G =9<9$;=:;:?;?;%9?;=<H;:<=:%98 :;C $ 8E:
E<9 :<LL ;:FC B % ; %=B< 9 <=:;BG <;A8 G %8=90 <=:?;
;=<$;8> ?;% >; <;@ 8@?;9 E<9 ;@;<;:C > %% >% ;:?<
?;88 9 9?8G :F;:%9$8 >% ;:FC <0 <= <B8=%9 ?;
A%$ 8 %8G9 ;G=G$?<:A<=$;:?% ;;=:<C9 I8G =;C > 8 < ?<B;
8 F;9%;B; 8G= G <9%G9 T# ?;$% <:; <=:<;?;9
?;B< :;=8> G %:%< ?<<B;8>?% 9<F <=$?8>?;
%;<<9 $8= <%=9 0E% ?%=<$% $G >; ;=$;8> =;?G=:;:<=:

5 $ 0%16-(#3 &:2*'($%&% -1%4(&% 1&#$+#&1 4 $0*(% 1"# 8 '*26&%,
(6+*1 +,'-0#%- "" ,#&+%,'$*(0 2#",+,'-*"!%&J +#& $%&% (0%-%4&#*# 3%("-
"%-- 11%4(9"%*+(0% -0 4% #"1#*+^ &#1#4 +, "3*1 D/R
%% (0% '&*1 +2#!%&+3%+(+,'$ &' &% #" #"#3#+'*+ &#1#4*6-^ +, "
**'1 D' <' DGR' %'$ -'&%1 "%, +,' 2+*+5$%, J +,'0*-#" -(
!*1(#&:, (%-'*+ (0% >***(0 :% &'#" 6-(*+* +' /<R' +' 11*,%+(*+ 0*-' 10*",K
0##,'0 ,'&%+,%&%,'0*3' +' %6+610 ^ *'%'NRJ' (0% #(0%& #3 +' 2%+%& "- $%&%
3 4":'6&+*-0%,'$*(0 9% &,-' ^ '**'1

^ %+#40#+
(& (2%3 cW ' W
96(*(*-',*-4&#!%,'9:', *":'%>4%&*%+1%' +,', %((,%,'9:'(0% 9%-()6, 2%-'(0% &%+("-
^ #: 2%',T &*6 '4' //<R
&#1#4*6-'*-'(0% '*&-($0#',%-1&*9%-' 3#6+(6& -*6-'^ +, "'+' '1' <' "V%
5,*'*1'+!*' @R' %' 3 :'9% 1#34 &%,'$*(0 %#' '&*1 3(-'^,%""T '&*1 '4 &(%!'
+' 36-# _ !2 (*9+*' %(* 22*' < <b'(*'*'4"'99 %2'9 b' &%1(#R' &3#"
^(#3 **'4' <GV' +,' 0 $'^4'-")ZR' eM V' 7*%0c' T '&*F6% 9: +('4' D<@ b



?%9' 8$$<9%8=' ?;' >8 ;99' ' & 0- .'%=' %$% C' E<8 ;9%B=;:' 8' ?;' < :%:9 <=:' ?;' _0 %%;;9' #.#i=V <' E<9' < ;=:;:' FC' <' < %<' <%=' 8>' 8=;' ?8G9<=:' =8? ;9#' <=:' >%A;' ?8 9%#:' 68 ?%$' 98 :%; 9#' E?8' 9%B=< %L;:' ?;%' A<>8 ' %=' ?;' 88 %9?' E< 9' ><;%' ; %' <9' 8A; 0 < ;:' FC' ?; 9; A;9' <=:' @; ?<@9' =;B ;$;:' FC' ?;' <=:<9' ?;C' A%;E;:' ?;' $8G= C' E% ?' ;=AC' <=:' ?;' $8=JG; 8 9' %?' :%9:<%=' FG' ?;%' ;<' 8 ' >%$ % %8G9' $8=9# <$C' E<9' @ ;9;=;:' FC' <' <99<$;' ?;' 68 ?9' E ;' 8@@ ;99;:' <=:' ?;' $<@ %A% C' 8>' < <> %:<' E<9' 988=' >8 8E;:' FC' ?; ' 9;$;' <=:' 9G9@%$%8G9' :;< ?' ?;' ; 8JG;=' @;=' 8>' <99%8:8 %G9' E<' ; %1' @ 8C;:' 8' ;@ 8<$?' ?;' <=:<' $8G ' E% ?' ?;' $ G;' A%8 < %8=' 8>' ;A; C' 98$%<' <=:' @GF %$' :G C' FG' ?;' A;=B;<=$;' E?%$?' ?;' ? ;< ;=;:' %=' ?;=< ;' 8>' ?%9' 98A; ;%B=' %B? ' F; :; %:;:' E% ?' % @G=% C' <9' 8=B' <9' > %$<' E<9' @ 8 ;$;:' FC' ?;' 9 <' <=:' ?;' 68 ?9' E; ;' :;9 % G ;' 8>' <' =<AC' =' ?;' F %=:' % @8 ;=$;' ' ' <=:' %=:%B=< %8=' ?;C' IV#G C' 9< G ;:' ?;' <@@ 8<$?' 8>' ?;' 8 <=9' ;= ; <%=;:' ?;' > ;;' 8>' ;% < %G9' %=' ?;' @8 9'8>' %$% C' <=:' E; ;' 9@;;:%C' :;%B? ;:' 8' <' < ;:' FC' ?;' 9G @ %9%=B' %= ; %B;=$;' ?< ' ?;%' ;A;=B;' E<9' ;M;$G ;:' F;C8=:' ?;' ;<9G ;' 8>' ?;%' ?8@;9' 8' @; ?<@9' 8>' ?;%' E%9?;9' 8' ?;%' > %;=:9?%@' ?;' ; @; 8' E<9' %=:;F ;:' >8' ?;' H%=B:8 '8>' > %$<' <=:' ?;' 68 ?9' %B? ' ;<98=<F C' ?%=H' ?< ' ?;C' E; ;' ;? % ;:' 8' ;9G ;' ?;' @899;99%8=' 8>' <' F< ;=' 8$H' 98' ;$;= C' ;@< <;:' <9' <' =G@ %<' B%>' > 8 ' ?;' %9 <=:' 8>' %$% C' ?;C' E; ;' 9 V' G=:;$;%A;:' FC' ?;' ?<GB? C' <=:<;' 8>' ;%9< %G9' E?%$?' ;M$% ;:' ?;%' < :C' <=:' G=<A<%%=B' ;@;=<=$;' 5' ?;' $% C' <=:' @ 8 8=N 8 C' 8>' %CF<;G U' %:' ?;' 8 <=' B;=;<' 5 F; 8=B;:' 8' ?;' <=:<9' <=:' $ $<% ' ?; ' FC' ?;' %B? ' 8>' $8=JG;9 ' 8 ' 9GF %99%8=' <C' :;9; A;' ?;' ><A8G' 8>' ?;' ; @; 8 D' C8G%' 8F9 %=<$C' E% ' @ 8A8H;' ?%9' :%9@ ;<9G ;' <=:' G9' H%=:;' <' E<f' ?<' $<=' ; %=<;' 8=C' %=' C8G' G ; ' G%=' >' C8G' $8 @;' G9' 1' <H;' G@' < 9' E;' 9?< ' $8= ;=:' =8' 8' ;B<%=' ?;' @899;99%8=' 8><' 9%=B ;' $% C' FG' 8' :;@ %A;' C8G' 8><' ?;' @ 8A%=$;9' E?%$?' C8G' G=IG9 C' E% ??8 :' > 8 ' ?;%' <E>G' 98A; ;%B= U' =<' %8=' 8>' E8' ?G=: ;:' ?8G9<=:' 98 :%; 9' %B? ' ?<A;' 9 % ;:' < ' ?;' A<%=' ;=<$;' 8>' WG9 %=%<=' <=:' ?%9' %;G ;=<= D' FG' <' 9@% %' 8>' :%9$8 :' <=:' :%9N <>;$ %8=' @ ;AI#;:' %=' <C' <=:' ?;' 68 ?9' 9G@@8 ;:' E% ?' ; G$ <=$;' ?;' %=:%B=% C' 8>' <' >; <;' ;%B= TT

":9 %63' $ -' 96"(' 9:' (0% '(0 2'*)* +-' ":34' >1!'.J' +,'*+' (0% '*&-(6+*1' $ &' T-(&#+2'-*(6 (*#+' +,'%>1%""%+(' 0 &9#6&' &%+,%&%,' (0 (' 4" 1% +'*34#&K (+(' #9)%1(' (#' 9#(0' + (*#+-

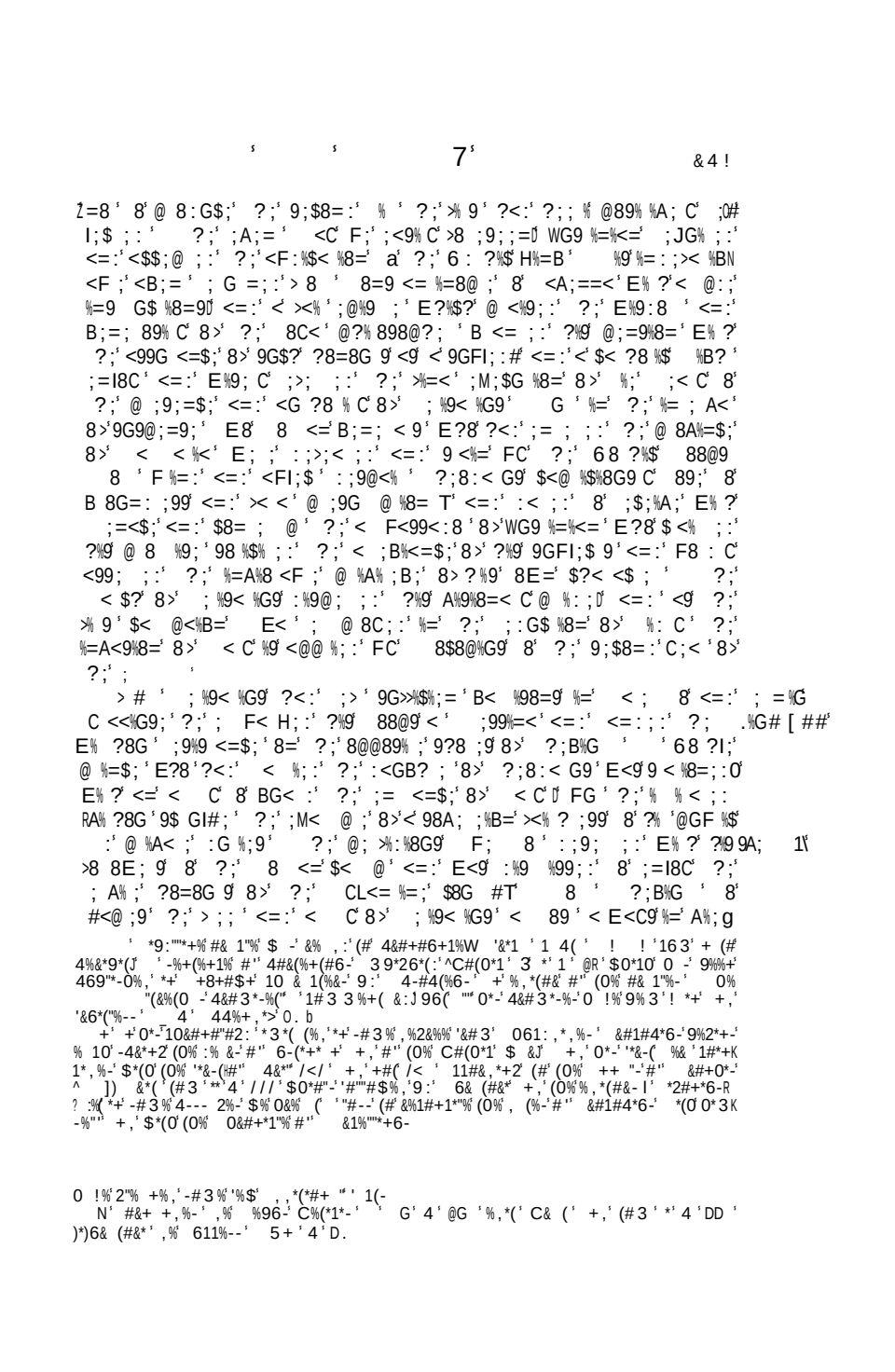
#34 &% (0% ,*''%&%+(' 4 -- 2%-'#" &#1#4*6-'^ +, "' ' *(' 2' /'C#(0*1'3*

4 0' & S0'

;M #$< ;' ?; 9; >'> 8 ' :<=B; ' <=:' @; @ ;M% C' FC' <' > ; ;' bG ;=:; '
%?;' <IB#E=08> < C ' '> >; ;' <=<'<; A ;'$; ;'% <99<F9$ %F; :'
' FC' ?;' ; G; <= ' ?<=:' 8>' ?;' $<@ %A;' #G; ;=D F. ' ?;' $8=>; 99%8=' 8>'
?;' 8 <='9; =< 8 9'E?8'E; ;'9; =' 8' 8=9 <= %=8@ ;#' ;A; < ; :' ?;'
G ?' 8>'?; ' :;@ 8 <F ;'9% G< %8=D <=:' WG9 %=%<=' ' ?;' A8%$;' 8>'<'
=; E'<=:0<99<:8 %=89 '@8%C; >8 C'%= ; $; : ; :'> '?; ' %>;'<=:' %F; C'
; ' ?;' 9; $; '%=9 G$ %8=9' 8>' ?;' 9< ;' %=%9 ; ' E; ;' <:<@ ; :' 8'
9/A ;' ?;'$ G; 'I;< 8G9C'8>' ?;8:8 <'E?8': ;<:; :' ?;'@ ;9;=$;'<=:'
9G@; %8 '$?< 9'8>'<' %A< P ?;'@ 8 @ ; :'E% ?'< >G '<=:'< F%BG8G9'
?%= 9' ?;' ;M; $G %8='8>'<'$ % ;'98'G9;>G ' 8' ?;' 8 % D ;$; %A; :'
?;' %= ; %B; =$;' 8>' ?; ' :;< ?' E% ?' B %; >' <=:' <=:%B=< %8=' <=:' :;N
=8G=$; : '%=' ?%9' <9 ; K9'=< ; '% 8 <' 0CA<' <B<%=9 ' ?;'@; >%:%8G9'
<99<99%=' =' < C' <9' E; ' <9'%=' >%%$<' ?;' BG% '8>' <=' G9G @; '
<@@;< ; :' 8' IG9 % C' ?;' < 9'8>' WG9 %=%<=D FG ' ?;' >8 $;9' E $?'
?;' @ ;@< ; :' E; ;' %=9G>>%$%;=' >8 ' ?;' 9GFA; 9%8=' 8>' <' %B? C'
K' H%=B:8 ' %>' ?;%' >;; F ;'=G F; 9' ?<:'=8 'F; ;=' G %@ %; :'FC' ?;'
E ;' ?;' 9@% % ' <=:' ?;' $8=:G$' 8>'<=' ?; 8' ' $?89;=' 88@' 8>'
BG< :9' E?8' 9; A; :' 8@' ?8 9;F<$H' <=:' E; ;' < ; :' E% ?' <=$;9'
<=:' FG$H ; 9'< ;=:; :' ?;' $; ' 98=' 8>' ; %9< %G9D' ?%9' $<A< C' E<9'
$8 @89; :' 8>' E8' ?G=: ; :' G=9' ? ; ;' ?G=: ; :' 88 9' <=:' >8G '
?8G9<=:' ' <=:' ?;' %=><= C' $8=9%9 ; :' =C' 8>' ? ; ;'
?8G9<=:' 9<G %<=9' ; ; %=B' ?;' 9< ;' $8G 9;' <9' %=' ?%9' >8 # ; '
;M@; :% %8=' ?;' 8 <=' $8=9G '$<9 '<= ?8 'F;>8 ;' < <=<' %=' %$% CC#
8' 9G A;C' ?;'9 ;=B ?' 8>' ?;' %9 <=:' <=:' 8' :;$%:;' E?; ?; ' ?;'
9?8G :' < ; @' ?;' $8=JG;9' 8' @; <$; <F C' @G 9G;' ?%9' A8C<B;' >8 '
?;' > %$<=' $8<9 ' ;' >8G=:' <' > G% >G ' <=:' <=:' <' > %; =: C'
@; 8@ ;9' 8 E% ?9 <=:%=B' ?;' :;$<C' 8>' <B %$G G ;' %$% C' 9 % '
9G@@ %; :' ?;'%B <=< %;9' 8>' 8 ;D ?;' >8 ; 9' E; ;' B <$%8G9 C' ;MO'
K' ; @ ; :'> 8 ' ?;' 8@@ ;9: % 8>' % % < C' JG< ; 9' <=:' ?;' 6 8 ?9'
E?8' G9 ; :' ?;' :;>;=$;' 8>' ?;' %9 <=:' 8' ?;' %=?<F% <= 9' ?<:'
9V/=;' ;<98=' 8' $8 @ <%=' ?<' ?;' $8=>%:;=$;' E<9' G=B < ;>%% C'
F; <C; : ' =9 ;<:' 8>'98 %$% %=B' <=:' ;M@; $ %=B' ?;' <%:' 8>' ?;' H%=B'
8>' < C' ?;C' C%; :; :' 8' ?;' >% 9' 9G 8=9' <' $?; ; >G' 8F; :%; =$; D'
=:' ?%9' @ 8A%=$; ' ?;' >% 9' > G% 9' 8>' ?;' G=%$' E< 9' E<9' <B<%=' '
<> ; ' <' 8=B' 9; @< < %8=' G=% ; :' 8' ?;' 8 <=' ; @% ; TT' ?;'
6 8 ?%$' B< %98=' 8>' < ; 8' E?%$?' < 8=;' < ; @ ; :' 8' ;9%9 ' E<9

Q(#1*4*+-#^'"*-1&% ,*(-' 9*-' -$+' %!*, %+1%^ +%1 ,#(' 1' * -R' 9 :'1#+'%--*+2'(9 (' *+' 9*-' 469"*1' 0*-(#&;' 0% 0 ,' 0#(' -4#8%+' (0% (&6(0' _ %' 1#6",' +#(' -4% 8' *(' P '&#3' '% &' #'' 0%#, ,& 'f' ^ %#' ' NM%' *N#-R' $0#' $ -' -(*"#' "*!% b' %%' (0%' 4*-("%-' '&#3' F6%%+' C6+, %**+ ' (#' (0% %(+4&%--' 0%#, #& ' & ' > ' DG' < ' <<R' +, ' #9-%&!%' ' -6-4*1*#6-' 5#&,' ^, %' * ' 4%&-#+ ' E1 R' $*(0' (0% %" 9#& (% 1#3 3 %+(&:' #'' 9# (' ((#3 ' ' 4 ' p@@ /R'

;0A#&' (0% 1#+F6%-(' #'' 9'1*": ' 1#3 4 &% (0% + && (*!% #'' &#1#4*6-' $*(0' (0% 1#3 4" *+(-'#'' #(*" '^C#(0* ' '*' 1' / J' 3' *** '1' R' 0% C#(0*1' F6%%+' 0 ,'" (%":' +5*%!%,'(0 ('&6*+8"%--'*-" +,'' & '*>' **RJ



'4)

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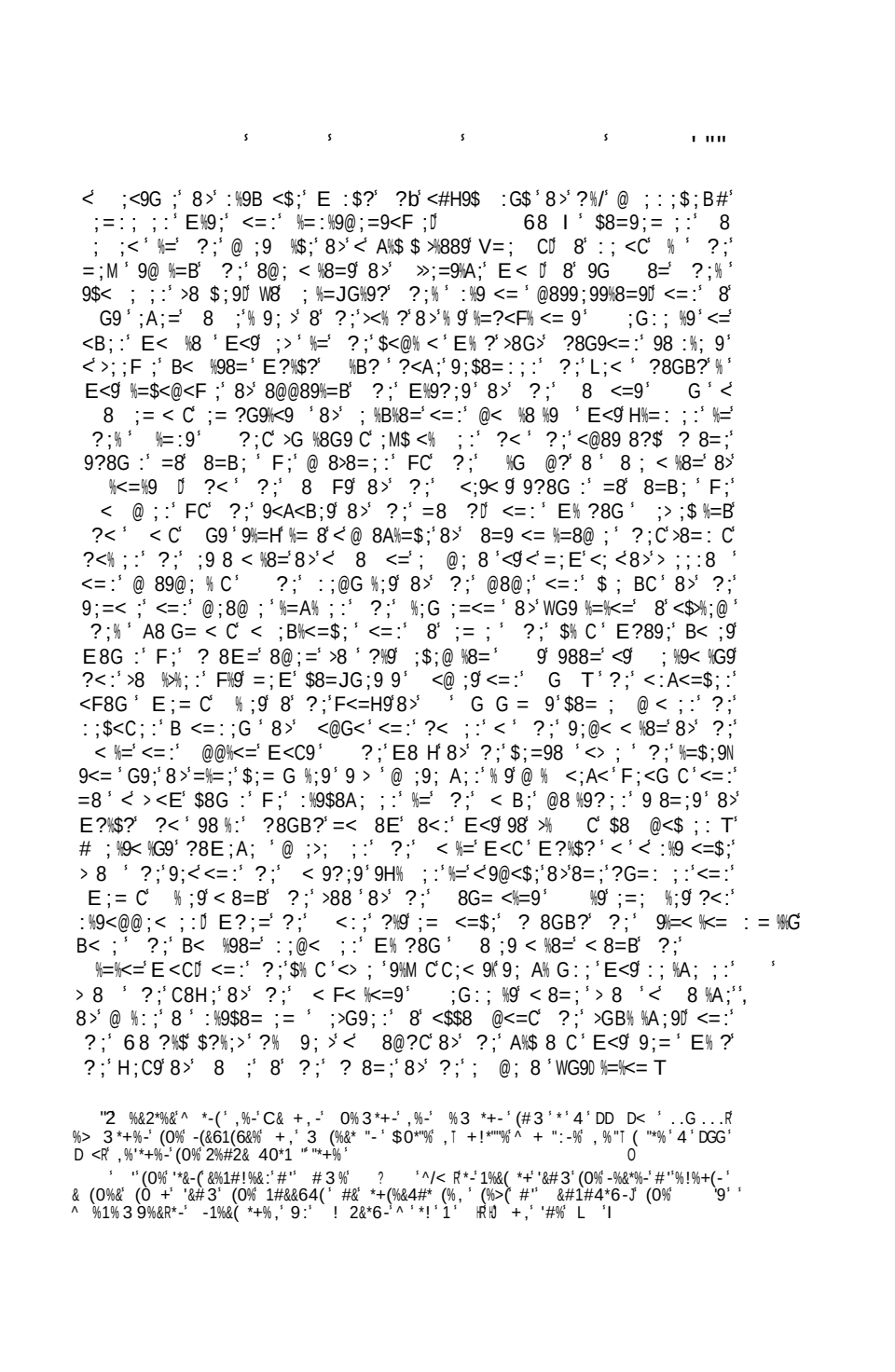

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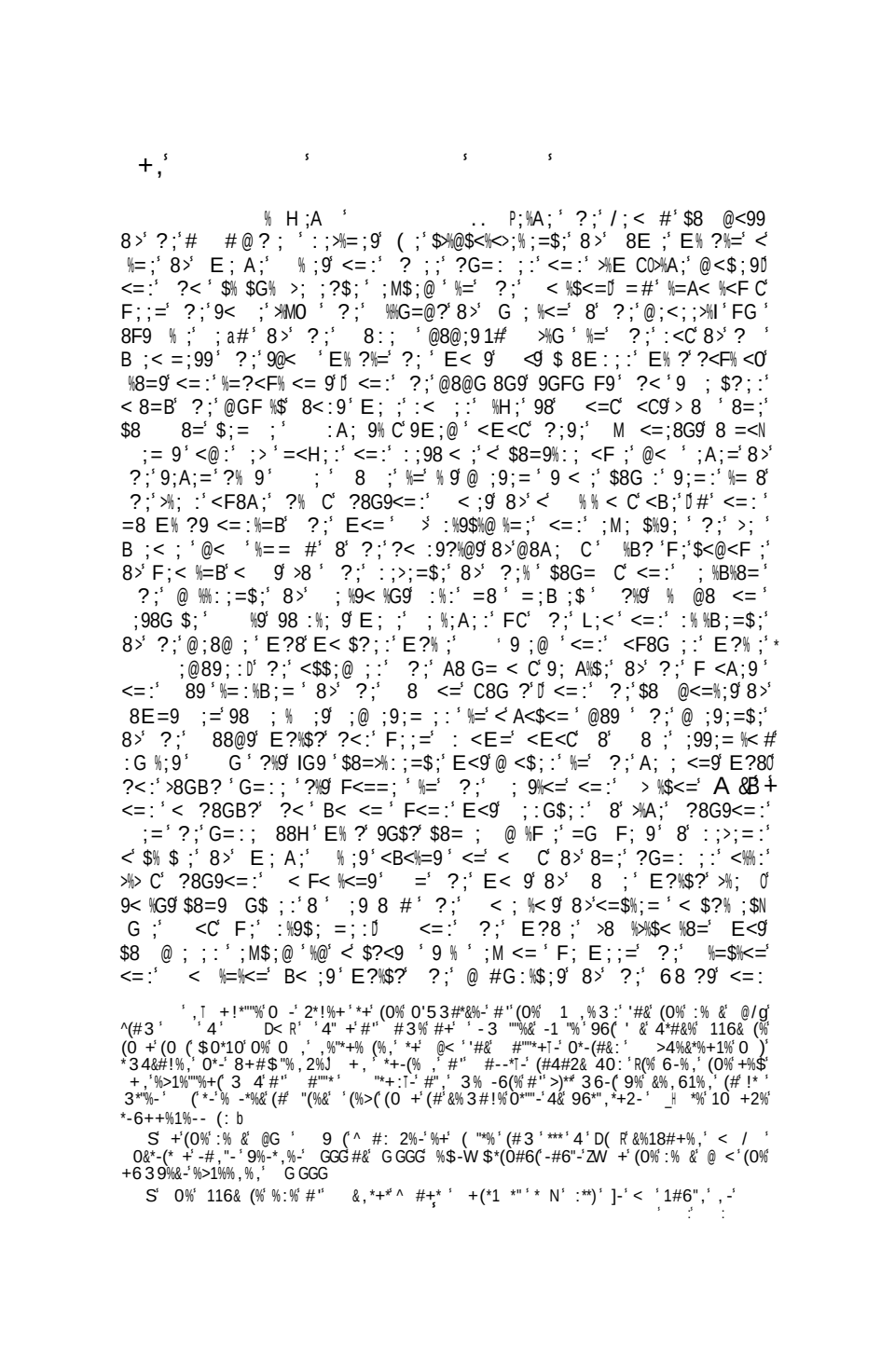

E?%$?' E<9' >8 %>%;:' E% ?' <' :% $?' =:' <%=@< ' =' ?;' G9$<=' %:;' 8>' ?;' %A; ' <' 9;A;= ?' ;=$< @ ;=' E<9' >8 ;:' %=' ?;' >%;:' 8 '$% $G9'8>' ?;' < %$<=' '>8 ' ?;'% @8 <=' '@G#9;'8>'$8 <=:%=B' ?;' #% AI<=' F %:B;' <=:' ?;' $8G 9;' >' ?;' %F; D FG ' ?;C' <@@%>8<$?;:' E% ?' :;A8 %8=' ?;' <:I<$;=' $?G $?' >' ' ; ; D <=:' ?;' ? ;9?8 :'8>' ?;' ?8 C' <@89 ;9'E<9' ;9@;$;:' :G %=B' ?;'9%;B;' FC' <' ? %9 %<=' ;=; C' =' ?;' <B;9' 8>'A%$ 8 C' <9' 8> ;=' <9' ?;' %#< ;' :;$;;:' 98 ;' :%9 <=' $8=JG;9 ' ?;' $8=9G' :;=8G=$;:' ?89 % % %;9' FC' G=F< %=B'%=' 98 ; =' @8 @' ?;' B< ;9' 8>' ?;' ; @ ;' 8>'W<=G9P1Q 8 ;9 %$' E<' =8E' ;=:; ;:' ?;' <: 8=% %8=' 9G@; N > G8G9' <=:' ?;'$; ; 8=C' E<9' 9G@; 9;:;:' FC' ?;' ;9 <F %9? ;=' 8>' <' =;E' ; %B%8=' G' ?;' F <L;=' ; @;' 8>' W<=G9' <9' ;>' 9 <=:N %=B' %=' ?;' >8 G ' D 8>'<' 9%L;' 9G>>%$%;=' 8=C' 8' $8= <%=' ?;' 9 < G;'8>' ?;' B8:' >%A;' $GF% 9' %=' ?;%B? ' 8>' <' ?G <=' >8 ' FG ' E% ?' E8' >;$;9' :% ;$;:' 8' ?;' ;<9' <=:' E;9 ' ?;' :8GF ;' B< ;9' E; ;' %H;E%9;' 8>' F <99D <=:' <' > G% ;99' ;>>8 ' 8' G =' ?; ' 8=' ?;%' G9 C' ?%=B;9' ;A;< ;:' ?;' 9$<=:<8G9' 9;$;' ?<' 98 ;' 8 <=9' ;' ;'9 % ' < <$?;:' 8' ?;' 9G@; 9 % %8=' 8>' ?;%' <=$;9 8 9

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8>ʻ ?;ʻ 68 ?9ʻ ?< ʻ>8 ʻ ?%9ʻ:<Cʻ ?;ʻ9%;B;ʻ8>ʻ 8 ;ʻ:;B;=; < ;:ʻ
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?< <99;:ʻ FCʻ ?;ʻ 8 <=ʻ B;=; < ʻ E?8ʻ %=ʻ > ;JG;=ʻ 9H% %9?;9ʻ
:# 8C;:ʻ <F8A;ʻ >%A;ʻ ?8G9<=:ʻ 8>ʻ ?;%ʻF <A;9ʻ 88@9ʻ ?;%ʻ
$<A< Cʻ E<9ʻ G=@ <$ %9;:ʻ %=ʻ ?;ʻ G9;ʻ 8>ʻ ?;ʻF8E ʻ>?;%ʻ5< $?; 9ʻ
9; A;:ʻ 8=ʻ >88 ʻ <=:ʻ ?%9ʻ :%A%:;:ʻ >8 $;ʻ E<9ʻ %=$<@<F ;ʻ 8>ʻ $8 ʻ ʻ
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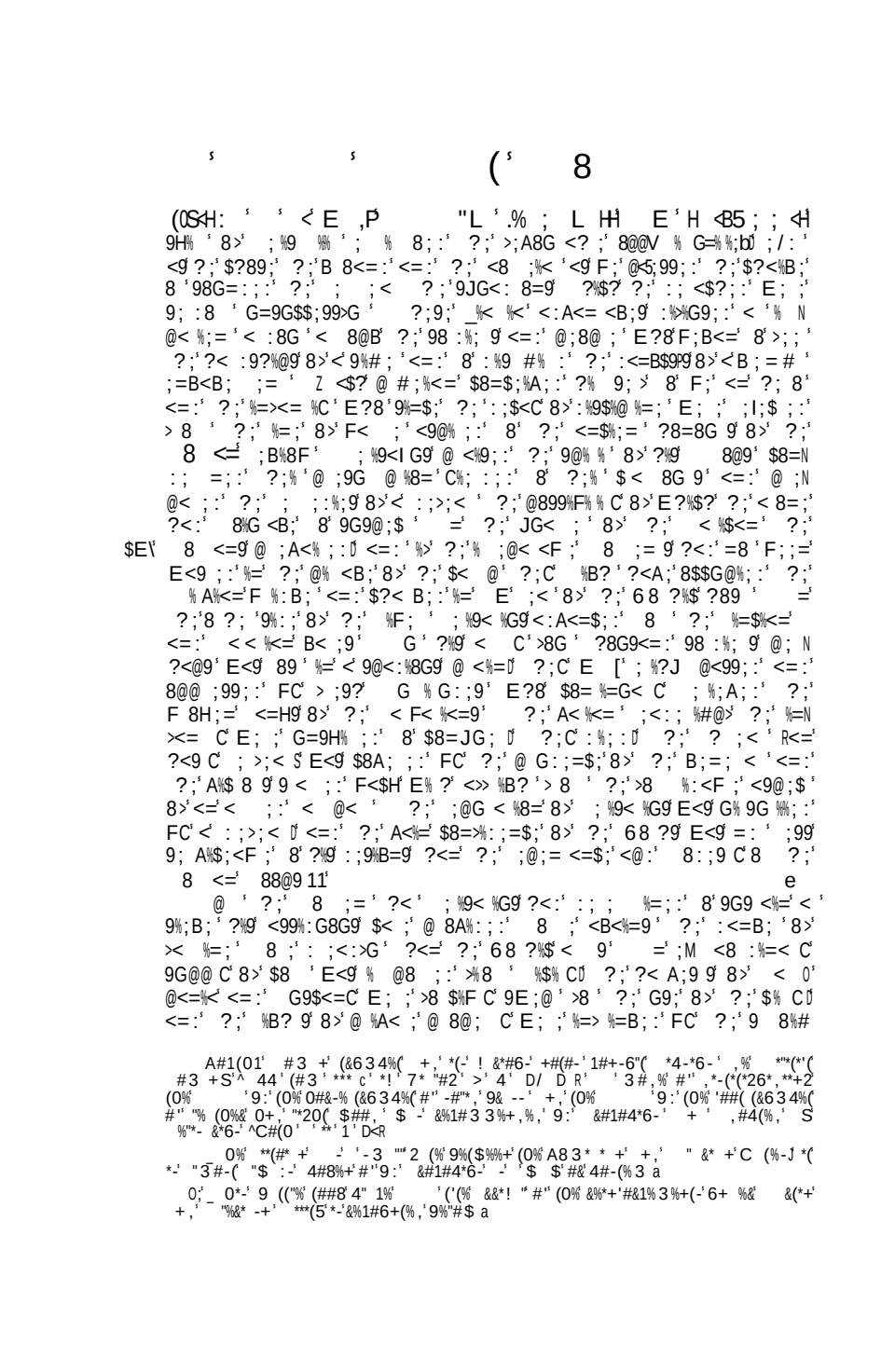
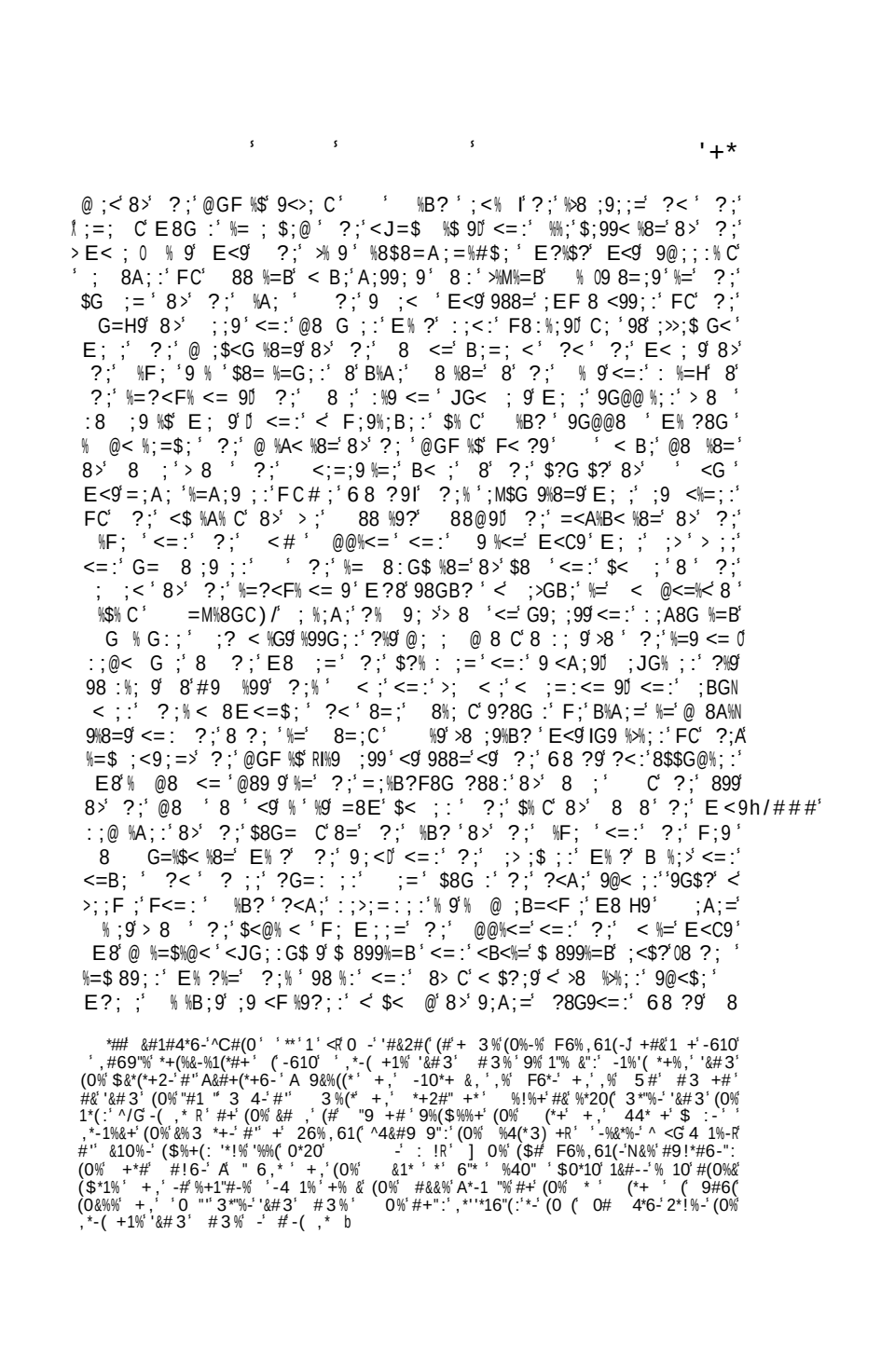
+,(8%ʻ * ʻ 9*15* ʻ1"#-%(# (0%¯ #&*ʻ 22*#&% aʻ ʻ





ʻ%= ; $;@ ʻ ?;ʻ$ =A8Cg 8>ʻ %$% Cʻ <=:ʻ < @<=%<ʻ ?;ʻ B <=< %;g 8>ʻ
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E<9 ; :ʻ E% ?ʻ >% ;ʻ <=:ʻ 9E8 :ʻ ß 9G$?ʻ 9$<= Cʻ 9G@@ %;gʻ <g %B? ʻC ; ʻF;7
8F <%=; :ʻ FCʻ ?<9 Cʻ ;M$G 9%8=gʻ E ; ;ʻ ?;ʻ ;E< :ʻ 8>ʻA< 8G ʻ <=:ʻ ?;ʻ
@G $?<9;ʻ 8>ʻ E ;< ?ß ?;ʻ >8 <B;ʻ 8>ʻ ?;ʻ ?8 9;gʻ <=:ʻ ?;ʻ F ;<:ʻ 8>ʻ
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@;8@ ;ʻ E ; ;ʻ ;M@89; :ʻ 8ʻ ?;ʻ %9; %;gʻ 8>ʻ 9$< $% Cʻ G=E?8 ;98 ;ʻ
>88 :I%#%ʻ <=:ʻ $8= <B%8Ggʻ :%98 : ; ^ʻ ; %9< %Ggʻ 9<E ʻ <=:ʻ@% %; :ʻ ?;% ʻ
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U ;ʻ Y3"\ ?;ʻ ;@ ;9;= < %A;ʻ 8>ʻ ?%9ʻ 98A; ;%B=ʻ <ʻ ?%9ʻ ?;<:0JG< ; gʻ %=ʻ ?J
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@ʻ4ʻ -10*+ &,ʻ4ʻDG ʻD Gʻ(0%ʻ#",ʻ4" +ʻ#"ʻ 6'ʻ "*+#ʻ +,ʻ(0%ʻ2&% (ʻ4" +ʻM
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%"*- &*6-ʻ%!%+ʻ*+ ʻ-*%2%ʻ &%4&%-%+(%,ʻ(0% %34%&#& +,ʻ 3 *+(*+%,ʻ(0%ʻ4(#6,ʻ
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8 ;' <=:' < ?<B;' 8:;9 C09 8 ;:'<' ?;'>;;'8>' = 8=%=<' E?8' ;$ %=;:'8=' '9 < ; C' $8G$?D' %F;' B;?; .:'E<9'b% ' ?G' ?;' A8%$;'8>' ;@ 8<$?' <=:' ;=<$;'%9 G;:'> E? 1?;' 8= ?' 8>'?%9'% N @; %8G9' E%>;' $$G9;:'FC' $;:%F ;' E% =;99;9'<=:' ?;' ;A%:;=$;'0 8>'?%9'8E='9GF9$ %@ %8=' ?;'9G$$;998'8>' ' ; ;'E<9':;9@8% ;:'8>' ?%9' @8= %>%$<'8 =< ;= 9'$<:'%=' ?;' ;<=' ?<F%'8>'<' 8=H'<=:' ; F< H;:'E% ?8G';:;<C'>8'<':%9 <='; M% ;'%=%' ?;' <9' ' ?;' ; @; 8 %9'$8 <=:' ?;'$; BC'8>' 8 ;'@ 8$;;:;:' 8' /'#8%$;' 8>' <' =;E' F%9?8@D' <=:' <> ;' <' 98 ; =' %=A8$< %8=' 8>' ?;' 8 C' 6?89 ';;$;:' ?;';<$8=' %B% %G9'E?8' ?<:'@G $?<9;:' ?;'@<@<' ? 8=;' FC'<' F %F;'8>' E8' ?G=: ;:'@8G=:9'8>'B8 :' ?;' @ 8>% 'Y.1/\' <=:'$8=9;JG;= C' ?;'BG% '8>' ?%9' 9% 8=C'E<9' % @G ;:' 8' ;%9<0 %G9D' FG' ?;' ?; 8' 8F;C;:' ?;' 8 :; 9' 8>' ?%9' E%>;D' = 8=%=<' 9; A;:' ?;' @<99%8=9' 8>' ?;' ; @ ;99D' <=:' ?;8:8 <' <A%9?;:' ?; #' ;<9G ;9' %=' ?;' A<%=' ?8@;' 8>' 8F <%=%=B' <' @8= %>' ?89 %;' 8 ' %=:%>; ;=' 8' ?;' $8G=$%' 8>' ?< $;:8= #U# ?;';@%9 ;'8>' ;%9< %G9' 8' ?;';@; 8'<==8G=$;:'?%9'A%$ 8 C' 0; ;<G' ?%9':<=B; '<=:'?%9' ;98 G %8=' 5' $$8 :%=B' 8'C8G' $8 <=:9'1 1111' E;' ?<A;' ;=; ;:' ?;' :8 %=%8=9' 8>' ?;' 68 ?9' <=:' ;:G$;:' 8' C8G' 8F;:%;=$;' %$% C' < @<=%<'<=:' ?;'$% C'8>' 8 ;'D FG' ?;' 899'8>' ?;9;'$8=JG;9 9' E% ' F;' 8 ;' :%9B <$;>G' ?<=' ?;%' <$N JG%9% %8=' E<9' B 8 %8G9' % ?; 8' ;' ?<A;' 9G$$;99>G C' >8GB?' <B<%=9' ?;' G % G:;'8>' ?;' < F< %<=9' FG' ?;%' G % G:;9' <C' >%=< C' @ ;A<% ' %$ 8 C'%9' ?;' B%>' 8>' 8A%:;=$;'FG' ?;' ;@G < %8=' 8>'H%=B9' <=:' B;=; < 9' :;@;=:9'8=' ?;' 9G$$;99' 8' ?;' >;% G ;' 8>' ?;% ' :;9%B=9' ; % ;' 8' 9@;<H' E% ?' > ;;:8 'P %>' C8G' E%9?' ?< ' E;' 9?8G :' %A;' 9;=:' G9' 9GF9%9 ;=$;D %>'C8G' :;9% ;' ?< ' E;' 9?8G :' $8=JG; ' 9;=:' G9' < 9' ?8 9;9' <=:' ;=' ?;' 8 <=9' ?<A;' ;$;%A;:' G9' <9' > %;=:9' <=:' :; %A; ;9D' FG ' %=' 8G ' @ ;9;=' :%9 ;99' 'E% ' F;' ;% ?; ' F; <C;:' FC' ?;% ' $8=>%:;=$;' 8 ' E;' 9?< ' F;' 8@@ ;99;:' FC' ;<$?; C' <=:' ?< ;:' 8 ' C9;>' =%C' %>;' %9' $8=9;$ < ;:' 8' C8G ' 9; A%$;' D % ' %9' C8G 9' 8' ;N > ;$ ' E?; ?; ' C' :;< ?' %=' ?%9' 9% G< %8=' E % ' $8= %FG ;' 8' #' B 8 C' <=:' @ 89@; % C' 8>'C8G ' ;%B= U' ; ?<@9' ?< ' ;%B=' E8G :' ?<A;' F;;=';JG< C' @ 89@; 8G9' %>' ?;' @;<$;>%% ' <9 ;' 8>' ?;' <9' ?<:' <F9 <%=;:' > 8 ' ?;' $8=JG;9' 8>' >%%$<' <=:' < C' FG ' <9' WG9 %=%<=' E<9' < F% %8G9' 8>'>< ;' ?;' <:;' 98 ;' ;>>8 9' ?;C'E; ;' >;;F ;' <=:' <=BG%:' 8' 9G@@8 ' <=:' ;9$G;' ?%9' A%$ 8 %8G9' B;=; <

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<= : ' @ ; =%$%8G9 ' JG< % %; 9 ' 8 > ' ? ; ' 9G ; ' <% ' %B? ' < ; < : C ' F ; ' % N
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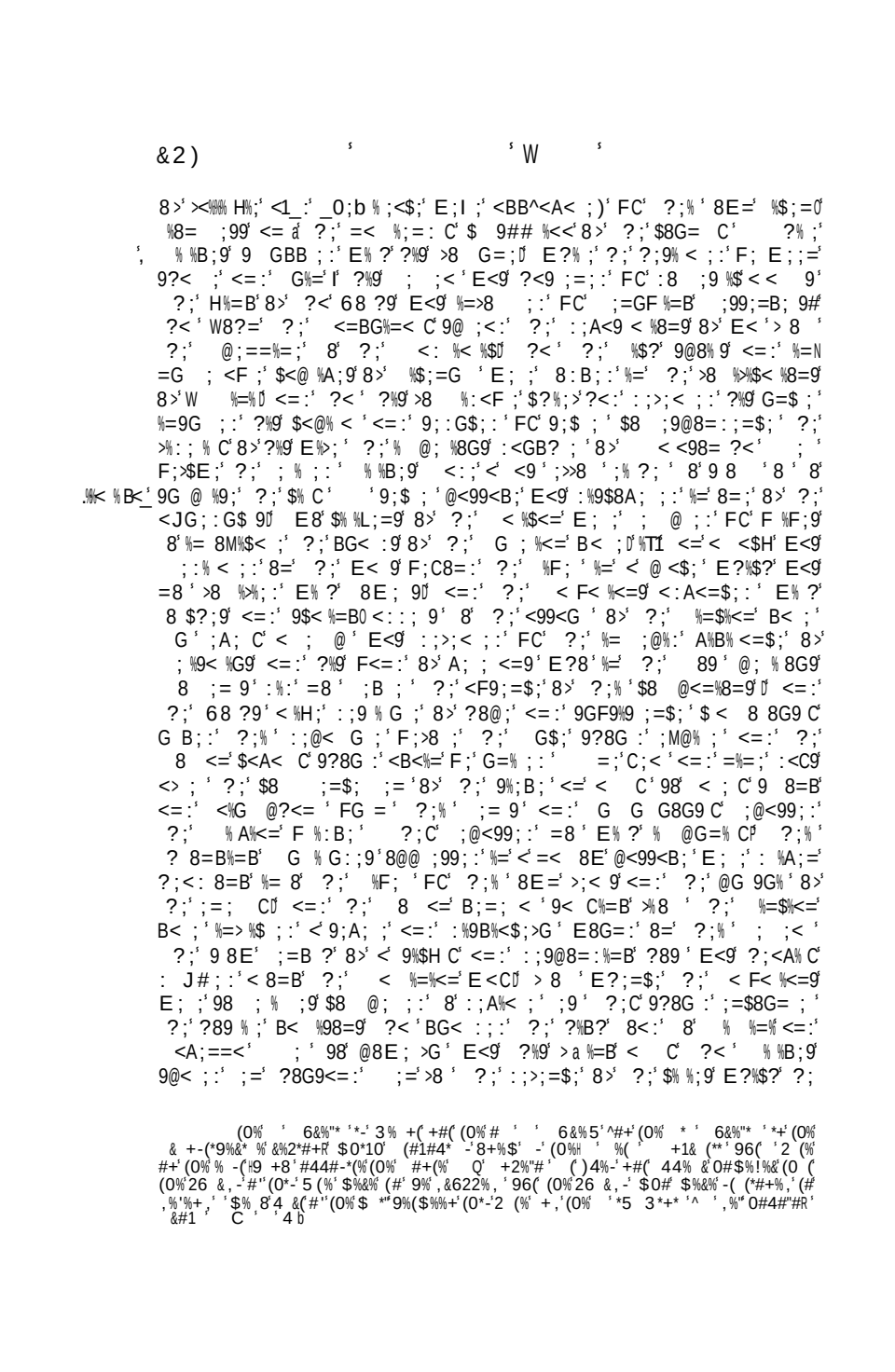
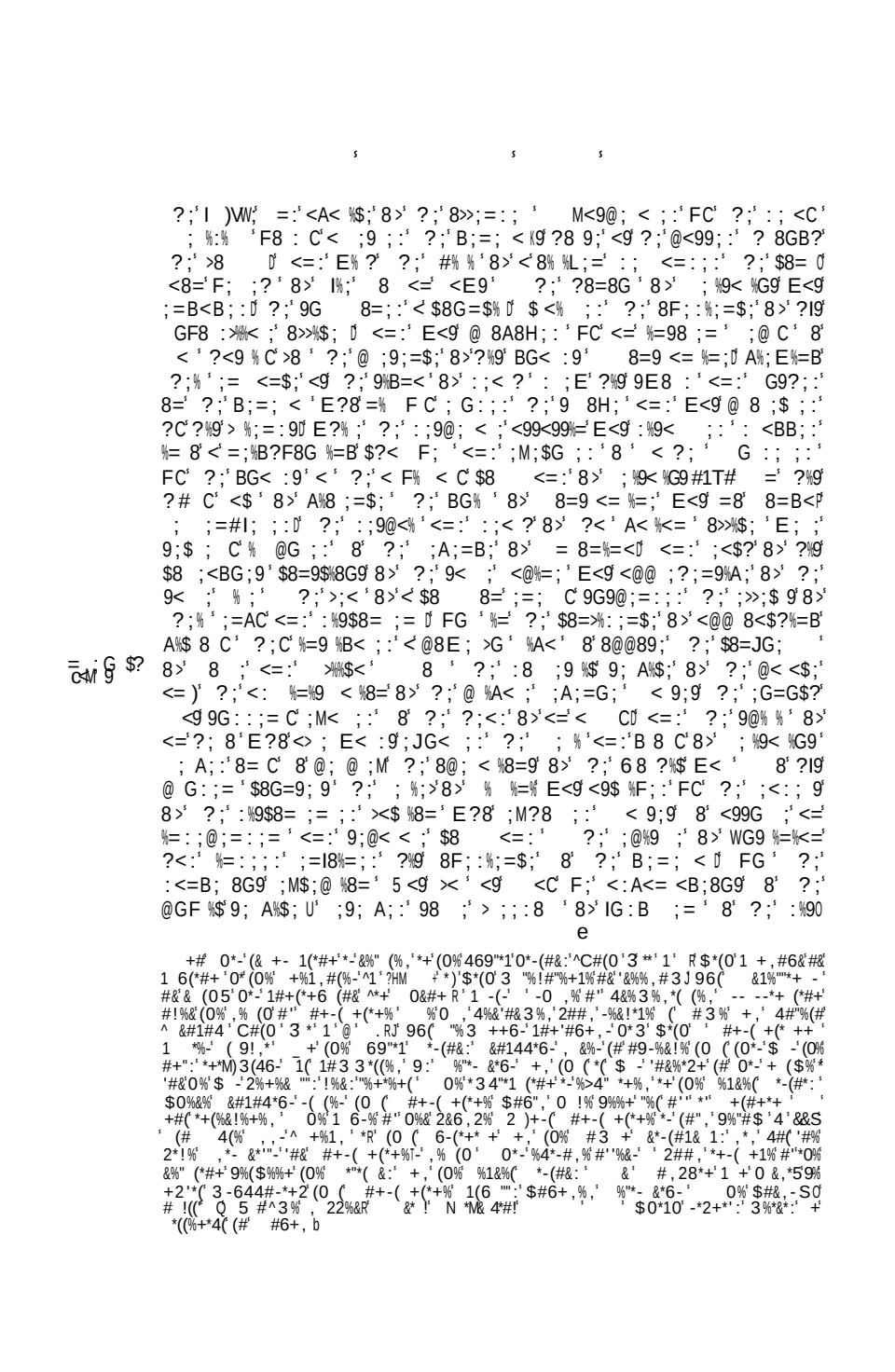




$; ; ' ><A8G % ; ' E?8 ?<:' 98 < #C :#@<%#; :' >98><' ?;'
<=:' >< % %< ' $8=A; 9< %8=' 8>' ?%9 98A; ; [' <' ?;' ;M; :9;' V>
?%9 :8GF >G ' %B? ' ?;' ;G?G$?' @; @; G< C :%99;= ; :' >H0 ' ?;'
8@%=%8=9 8>' ; %9< %G9 <=: ' <> ; ' C%; :%=B E% ?' ; G$ <=$;' 8 ?;'
9%;B;' 8>' F%=8' ?;' :;9; ; :' ?%9 $8 ;<BG;' %=' ?;' %B? ' <=:'
< $?; :' <E<C 8 ?;' $8=JG;9 ' 8>' ?;' W% % %<=' @ 8A%=$; ' ?;'
>%; $;' <=:' >8 %:<F ;' F<=:9 8>' ?;' ; G % E ; ' < <:%; :' 8 ?;'
@; 98=' 8>' < 9;9 f ' ;=' ?8G9<=:' 8%=<=9 <=:' $8=>; : ; < ;9 E ; ';
@; 9G<:; :' 8 < $?' G=:; ' ?%9 F<==; 9 ;A; C < ;$8= ;=' ; 0
F <$; :' ?;' ><% ' 8@@8 G=% C 8>' ;A;=B%=B ?%9 @ %A< ;' 8 ' % <B%=< C
E 8=B9 <=:' ?;' ; <%=%=B 88@9 8>' ; %9< %G9 E ; ' :%A%:;:' < :'
:%9@; 9;:' > 8 0 ?;' B< %98=9 8>' %$% C 8 ?;' 9?8 ;9 8>' ?;' <0
: %< %$' %9 9H% ' <=:' @; 9;A; <=$;' 8A; $< ;' ;A; C 8F9 <$;' f 0777
F%=8 E<9 <H;=#%# ?;' 9%;B;9 8>' <;9G9;' A%; 8 ' <=:' GM%0 # T1'
G ' E ; ;' G=:; <H;=' <=:' A%B8 8G9 C @ 89;$G ; :' <=:' ?;'
;G=G$?' < 9;9 E<9 < ' ;=B ?' ;$< ; :' 8 ?;' :8 ;9 %$ $< ;9 8>'
?;' @< <$; ' ' :%99;=9%8=9 E ; ;' ?;< ; :' <=:' < ' 8@@89% %8=' E<9
9GF:G; :' FC ?;' ; @; < ;' <G ?8 % C 8>' ?;' 8 <=' B;=; < ' 8
E?8 ' ?%9 ;=; %;9 $8G :' =8 ' ;>G9;' ?;% ';9 ; ; ' <=:' ; %9< %G9
%=$G $< ; :' ?;' 9< G < C ;998=' ?< ' ?;' >8 $;9 8>' ?;' 9 < ;' 9?8G :'
$8 @89;' 8=;' F8:C <=:' F;' <=% < ; :' FC 8=;' 98G ' G ' %=' ?;'
%= ; A< ' 8>' :%9$8 :' ?;' 68 ?9 E ; ;' @; % ; :' 8 F ;< ?;' <='
% @8 <= ' 9;<98=' E<9 89 ' % <=' E<9 ; ;9 8C; :' <=:' ?;' =8 ?; ='
@ 8A%=$;9 8>' < C E ; ;' <>% $; :' FC <=' %=G=:< %8=' 8>' ?;' <=H9
?;=' WG9 %=%<=' >% 9 ' ; :% < ; :' ?;' $8=JG;9 ' 8>' < C ' ?;'
< F<99<:8 9 8 ?;' H%=B9 8>' ?;' <=H9 ' <=:' <:IG ; :' ?; '
?;' $8 8=' %;9 8>' < %<=$;' <=:' ; %B%8=' 8 I8%=' %=' ?;' ?8 C '
;= ; @ %9;' <B<%=9 ' ?;' %<=9 ?;' 68 ?9 <9 ?;% ' E<= 9 E ; ;'
8 ;' G B;= ' ; @ 8C;:' <' 8 ;' ;>>;$ G<' 8:;' 8>' @; 9G<9%8=' <=:'
A<%= C 9 8A;' FC ?;' B%> ' 8>' <=:9 8=;C 8 @G $?<9;' ?;'
> %;=:9?%@' 8 ' < ' ;<9 ?;' =;G < % C ' 8>' <' %B? ' <=:' @; >%:%8G9
=< %8=#%# G ' ?;' < 9 8>' ; %9< %G9 <=:' ?;' ;A8 ' 8>' ?;'
< %<=9 ?<:' =8 988=; ' 9?<H;=' ?;' 68 ?%$ 8=< $?C ?<=' ?;80
:;F; ' 8>' G9 <9%<' ?;' 89 ' @8E; >%% ' <=:' E< %H;' 8>' ?;

V6 0%:'&%'6-%'(# -%&!%' '(%&' 0*-' ,%4 &(6&%J -#"','(0%*&1 4(*!%-' +,'1 (("%' (#' (0%'
C#(0-J +,' -$#&%' +%!%&' (# '*20(' 2 *+-(' (0%3 ' &#1#4*6-' *+(&#,61%-' '16&*#6-'
,*2&%--*#+' #+' (0% 3 ++%&-' +,' ,!%+(6&%-' #"' (0*-' $ +,%&*+2' + (*#+' ' 4 &(' #"'
$0#3' '*+ "":'%3*2& (%,'(# 06"%'#&' 1 +,*+ !* '^C#(0' '**'1' . /R

'\$' 7%1' ' '&"' &9-' %(6-' $ -' (8%+' % &":' *+' '&*' A %-6" % +,'
6>*3 6 3' 9#6(' 1(#9%&' #&' #!%3 9%&' *+' (0% 3%:% &' %% "*+(#+' A '
,' ++ ' 0

' 0*-'++(*#++*' &%4&# 10' #"' 4%&'*,:'^ &#1#4' C#(0' 3 **' %' D/R #'%+,-' (0% % &
#"' ' #(0%' "' ' :%&'^(#3' !***' 4' < /R' $0#' 1&*(*1*-%-' -'*"' 0%' 0 ,' +#(' &% ,'
(0% C&%%8' 9*-(#&*,+

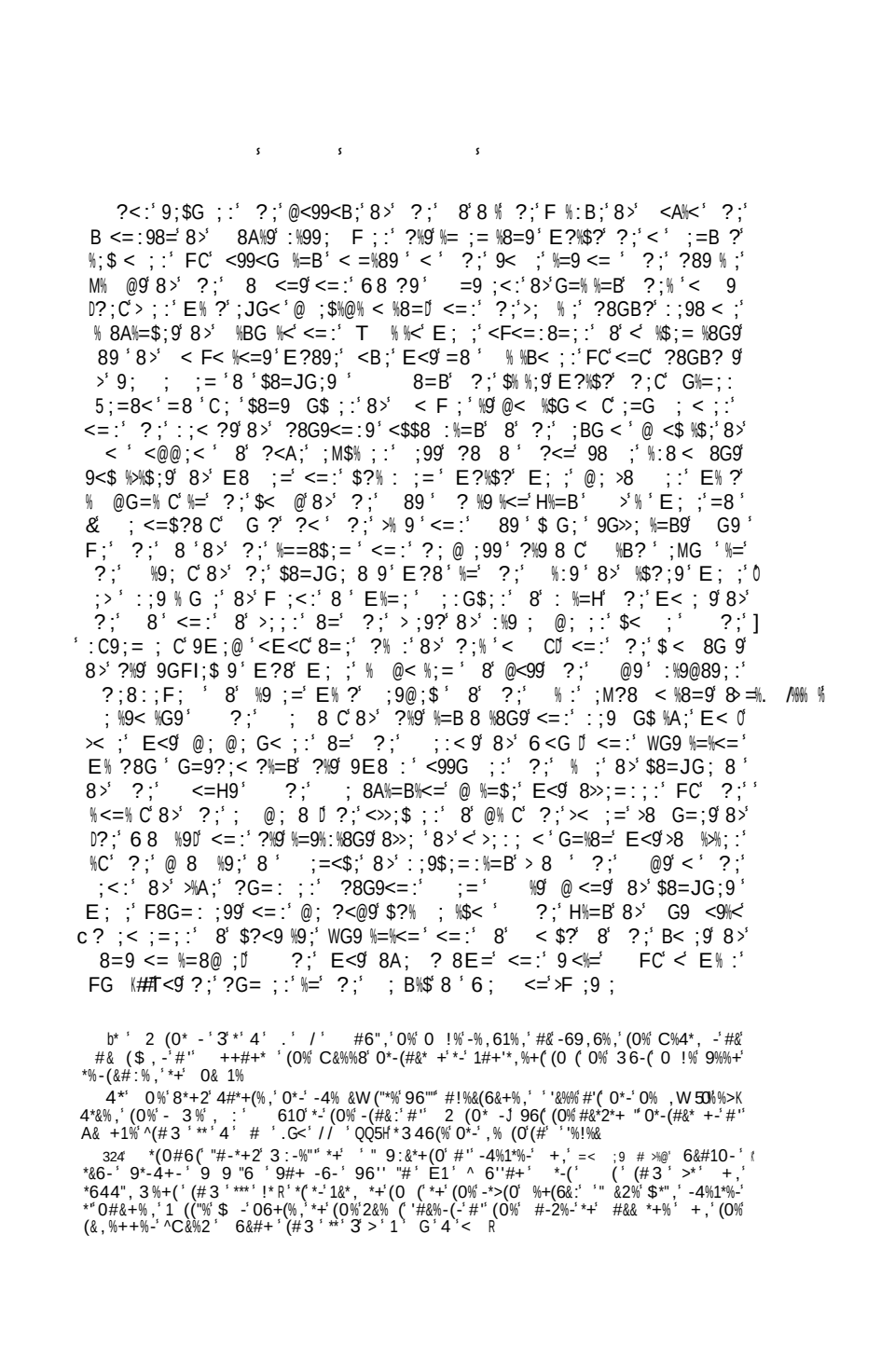
; 8A%%#%D%> =' ' @;%9G<:;:' ' 9G$$8G ' ?;% ' :%9 ;9g' FC <=' %=:% ;$ ' :(' B B%: I" ' <%:' % ?8G ' ;M@;$ %=B' ?;' $8=9;=' 8>' ?;% ' 98A; ;%# ' " .< ?8G9<=:' G BG=:%<=9 ' ?%g' ;$;=' 9GFI;$ 9 ' :;9$>> :;:' > 8 ' ?;' @9 ' <=:' I8%=;:' ?;' 88@g' E ?%$?' % %B;9g' ?<:' 9;=' 8g' #<9 %9;' ?;' ;A8 ' 8>' % <=' > ;' <=' 8F9 %=< ;' 9%;B;' ?; $<@% <' 8>' #G %<' E<g' ;:G$;:' FC' >< %=;' FG ' =8' $<@% G < %8=' $8G :' I ' 8F <%=;:' ;M$;@ ' >8 ' ?;' 9<>;' ; ;<' 8>' ?;' 8 <=' B< %9 %' < %G9 ' ?;' 8 ?8:8M' F%9?8@' E ?8' ?<:' 9;:G$;:' ?%g' $8G= C ;=' 8' ;F; %8=' <=:' G%=' ;9$<@;:' 8' ?;' GMG C' <=:' ?8=8G g' 8>' ?;' CL<= %=;' $8G g' FG ' ?;' $; BC ' @; ?<@g' ?;' %<=' $; BC ' E ; ;' 9 <GB? ;:' <' ?;' >88 ' 8>' ?;% ' 8E =' < < g' FC' ?;' :;>;=:; g' 8>' ?;' < ?8 %$' >< ?' ? ;;' ?G=: ;:' ?8G9<=:' < ;g' E ; ;' 8' F;' 9 <%=g' ?;' >; < ;' 9;M' <=:' ?;' 8 ;' @ ;$%8G9' %#8% ' E<g' ;9%B=;:' ' ?;' G BG=:%<=9g' <=:' ?;' ?8G9;9' 8 ' <' ;<9 ' ' E< 9 ' 8>' % <=' E ;' ;A; ;:' E % ?' ?;' B 8G=:' ?;' 68 ?9' %=' ?;% ' <9 ' 8 ;=9' E ;' ;A;=B;:' FC' ?;' :;9 G$g' %8=' 8>' <' $% C ' 9;$8=:' 8= C' 8' 8 ;' %=' 9%L;' <=:' 8@G ;=$;' %=' ?;' 9@ ;=:8G ' 8>' % g' FG% :%=B9 ' 8 ' ?;' =G F; ' 8>' % g' %=?<F% <= g' <=:' ; %9< %Gg' 9C @< ?%L;:' < 8=;' %=' ?;' >< ;' 8>' ?%g' :;9; ;:' <=:' :;N A8 ;:' > %;=:9 =$8G <B;:' FC' ?%g' 9G$$;99>F ' %= 8<:' ?;8:;F; ?% 9; >' %=' ?;' ;=9G%=B' 9@ %=B ' %=A<:;:' ?;' @ <%=g' 8>' < C' E% ?' <=' < C' 8>' 8=;' ?G=:;:' ?8G9<=:' < F< %<=9 1Z# ?;' H%=B' <=:' 98 ;' $?89;=' >8 8E;g' E ;' 8G= ;:' 8=' ?8 9;F<$H' <=:' < ;:' E% ?' <=$;9' ?;' %=><= C' E% ?8G ' F8E g' 8 ' 9@;< `' E ;' 9< %9>%;:' E% ?' <' 9?%;:' <' :8GF ;0;:B;:' F< ;0<M;' E ?%$?' %=' ?;% ' ?<=:9 ' F;$< ;' <;:<:C' <=:' G=; %=B' E ;<@8=' < C' ; F;:' < ' ?;' < $?' 8>' ?;' <=H g' <=:' F8 ?' ?;' 68 ?%$' @ %=$;' <=:' ?;' 8 <=' B;=; < ' < %H;' %B=8 <=' 8>' ?;% ' :;9%B=9' 98 %$% ;:' E% ?' ?8@;' <=:' ; 8 ' ?;' >%#;=:9?%@ 8>' ?;9;' :<=B; 8Gg' < %;9 '

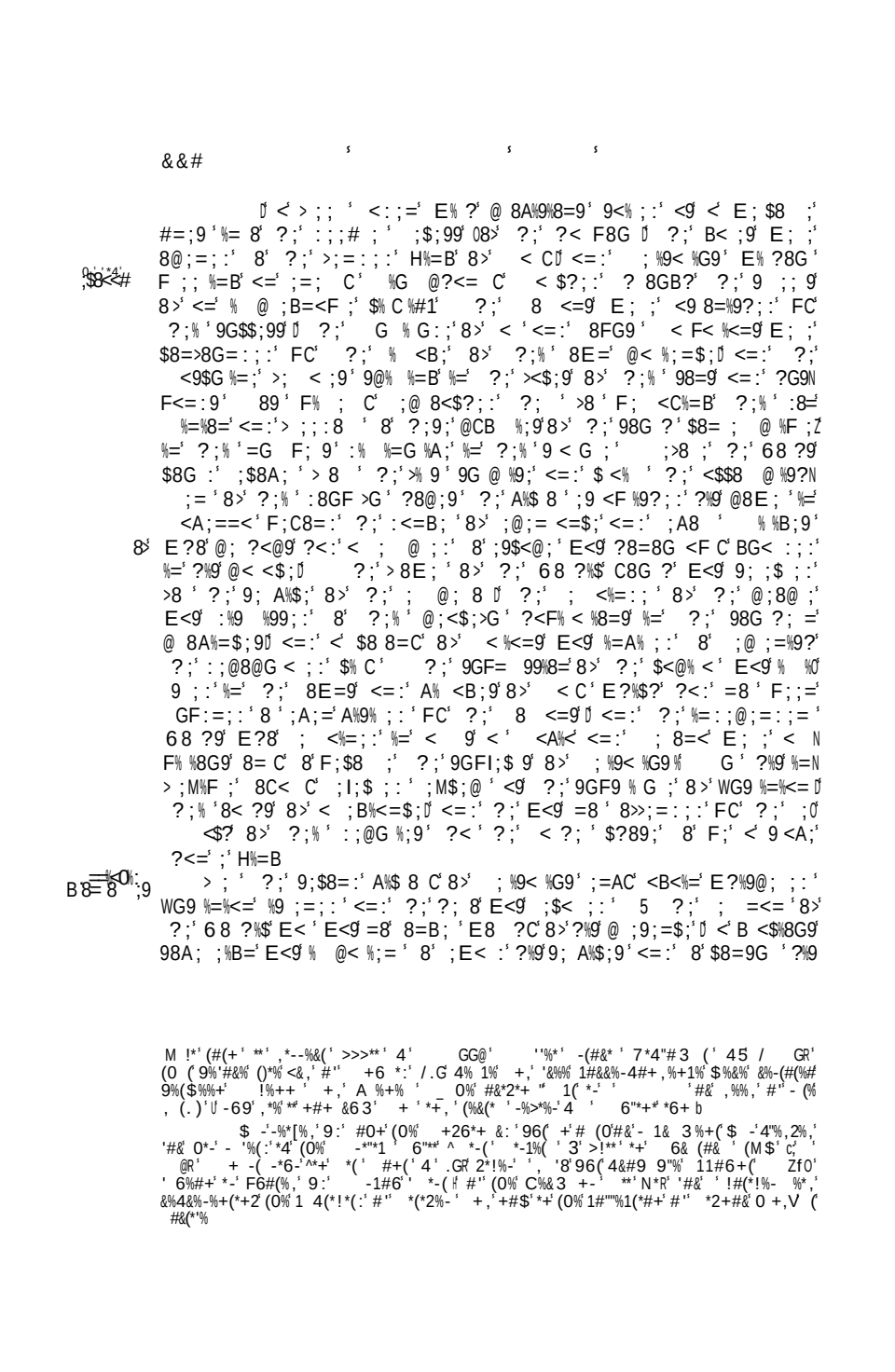
&#((*6-' 44" 6 ,-' 0*-' (&% -#+' +,')6-(*'*%-' (0%' C (0#"*%' 9)-0#4-W F6*' +%' -69' 0%&%(*1#' 4&*+1*4%' ,%2 +('#3+%3' " 4*,%3' 3#!%+(W +' 6-%'6*' 1 6(*#+' 0%' 3#&%' & (*#+ '' 6& (#&*' ^ +0 "*' ,i"("* '(#3' ! ' C' / .R 0*+(-' (' (0%' 26*"('#'' 4%&)6&:' +,' 9" ` 3%-' (' '5-(' (0%' ? 6! '#'' 7 (*6-

(-' (' 7 (*6-' $0-' 3#&%' -611%--'6*' 2 *+-(' ,%!*9' (0 +' 2 *+-(' &9 &* +-J' %' (& !%"'%,' $*(0' '+6 3 %&#6-'&%(*+6%' +,' 1164*%,' (' #&*+(0' '*' &2%' 0#6-%'^ ((#+*4-' / ' '&"' ' #' J' = ' '&*' #' 24$

33-' '^1#34 &%' &#1#4*6-' C#(0' '**' 1' ' 2'^R' %(' -610' 4#46K " (*#+' *-'+1&%,*9"%')' +,'(0%' -%1#+,'#&' (0*&,'1*(:'#'' (' ":' +%%,' +#(' &%4*+%' *'' $%' #+":' ,%1*3 (%'(0%' + $9%&-'#'' (0%' 4&%-%+(' (% (' #(0' *" +' +,' C%+# '&%!*!%,' *+' "%--' (0 +' (0*&(:' % &-'^ 6*' 7* 1#+' ,%C%-("-' +2#9 &, ' '**' %' < R

"*(' %-*,% &#1#4*6-' 4%&0 4-' (##' #3 +' -%%' (0% 9&#+*54-' #'' &*6-' +,' &1%"'"*+6-')#3 +,%-'^*+' 611%--' %2+' *+' 6& (#&*'(#(+'#;' 4'D.cR' +,' (=d# #'' #6&-'^' '*(' 1' <-' *+'(#3' **' #'' (0% *-(#&* +-'#'' A& +1%R' C&5#&:' -6 4 4 4 5' ' ,%'% (' #'' ,*- (*6-' $0#' *N' "3#*+'^,%C% (*-'A& +1' ' **' #' D< 0MVPV, X' '*R0 *-' -" *+' 9:' (0%' A& +8-





#A%9:8 0 <=:?;< 8% ;E<9$<@<F ;8>:;>;=:%=B ?;<9<B<%=9 ?;%==G ;<F ;< %;9 8> ;9%<0 ;%9<%G9G=:;9 88:?;
%G @%$%8=<$$;@ ;:?;M$G9;; F<H;:<<A;==<?%9 9@8%9 :8@?%;90 <=:@8A;:?C?%9 ;<:C8F;:%;=$;?<?9G$?<=
%F G@ ; 8A<>8 ?;B8A; = ;=8> <C E<9=8 ;99G=IG9 ?<=%?%B??<A;F;;=%=:%9$;; ?;; @;8 ;$<A;:E%?
?8=8G <F ;$8G ;9C F8 ?%B;9<=:?%9 8 ;=8F ;$8=98 0 <=:<9 ;H%=B8>?;6 8 ?9$8=>8 ;:8?;?<=<9%<=><%?
8F <%=;:E%?<%$?%=?;%<=$;8><=:9A;C9@;$<8<:%;:E%?8G
'9;=<8 0 <=:@< %$%<=3#T A;C9@;$<8<:%;:E%?8G
@;%?;9 ;=B?<=:9<G;8%;C8G=B<F<%<=90?;C
<:8;:?;<I;9C8>?;?8=;<=:@8 %9;:8?9?;:?;?
F88:%=?;9; A%$;8>?;%F;=;><$8 WG9%=%<=:;@89%;:%=
?;CL<=%=;@<<$;?;;<9G ;98>?;688?%$ 8=<$?C
><;%=B9;=<;E<98 ;% ;9<:% ;:8B<L;8=?;<B=%1
$;=9@;$<$;0FG%E<9;=A%8G9C9;$G:;:>8 ?;@GF %$
A%;E0<=:?;$8=JG;8 8>< C ;=8G=$;:E%?8G<G G
@;?<@9E%?8G<9%B?? ;E;0;<=;:?8=8G 98>< 9;$8=:
%G @?%9B8C E<9%=:;;:;M< ;:<F8A;< ;M;=<
@8 @0<=:?;><%=<=:?8 8E@<%9;98>?;$8G E;;
9G@@%;:;A;=%=<9;A%;<B;FC?;?;9@;$?<=:<:%<%8=8>
?%9$8G=C ?;=;A;?;<@@;<;%=?;9 ;;9<%G9<<$;:<=:9<%9%;:?;
;C;98>?J@;8@;%9 >C9<G;<=:=%<I;9%;$8G=;=<=$;
7>G>% ;:?;%;M@;$<%8=98>=?;80?;<=;9 8>?%9>;8E0
Y$%%L;=9E;;; F8 :;=;:FC?%9B;= ;<=:B<$%8G9:; ;<=8G0
%<=:?;< %<=E?%$?<;=:;:?%9>88 9;@9;>?%9@;98=
8;<$$;99%F;?<=%=<:<C8>F< ;;A;=?8G9<=:?8 9;N
;=<9 ;$?;99>8 F;<G C<=:A<8G E;;<%=<%=;:%=?;
9;A%$;<=:<?;@ %A<;;M@;=9;8>?;B;=;<?%9 >
@8E;99 E<9<E<C9$8=9@%$G8G9%=9%=B;$8 F<9 8 %=?;
>8;89 <=H90<=:F8?@<%;9$8=>;99;:?<%=?;9%;B;8>
X 8;?;BG<:9 8>;%9<%G9?<:<8=;A<=JG%9?;:?;<F<N
%<=?89 ?;%=G F;9E;;$8=%=G<C<GB ;=;:FC?;
F<A;9<=:89 >8%?>G 8>?;;=;C0<=:=9>8 G=<;

&0 *(*2%-'*!%,'($#:%&-'(#+-(+(*+#4"%'+,'*34%&(#&*-'*+' = > ! '^#& 1#+)++1(6-;'&%96-'%>1%--*(963+*-' *-'$*,#$'$! '(0%$*'%'+,'3#(0%&#'(0%4(&*1*+-'(0%%",%&'+,':#6+2%&'C%&3+6-'6+*(%,'(0%-(&% 3-'#''+*1*+' 4,'53"*9"##,'^#&+ +,%-'1' #'4'DD'*+' 6&(#&*'(#3'*R

&#1#4*6-'C#(0'3'***'1' '*3#*+' 'A&%+10' '#'(0%>*(0'1%+(6&:'$0# 0 ,'#9(*+%,' +,'0 -' ,*-'*26&%,'-#3%' 6(0%+(*1'*+'#&3(*#+'#'' %"*- &*6-'3%+(*#+-'*+'00' " ,4# ! '#&'-" !%-WF6#S'4&#4&**-' "*36-'-(*4%+,**-W'9%-*,%-' GGG#-#",*%&-'^ *-(#&* +-'#'' A& +1%'(#3'***'7%C%-(*-'A& +1'3'**'1' '#W0)'0

' ' , < ' 4 ' '

$<@ %A;9# ? ;' <=:<9' ? ;' ;819'<=:' ? ;' 6 8 ?9' ; G < ; :' ? ;'
< %G:G=;=';>'?%9':8 ;9 %$'>8 8E; 9' C' ? ;' G=%8='8>' %F; < % C'
<=:'IG9 %$; '? ;'<$JG% ; :' ? ;' 8A;'8>' ? ;'98 :%; 9'E% ?8G '< %;=< %=B'
? ;'<>>;$ %8=9'8>' ? ;'@ ; 8# ;' ? ;'9%$H'<=:' E8G=: ; :' E ;' ; %;A; :'
E% ?' ; :%$%=;9'<=:' 8=;C0'<=:'9 % ' 8 ;' ;>%$<$%8G9 C'FC' ? ;'
? ;<%=B' A%9% 9'<=:'9 % ;9'8>' ? ;% ' $8 <=:; ' ? ;' 899'8>'<'
E ;<@8='8 ' <' ?8 9;' E<9' %=9 <= C' ;@<% ; :' <=:' ;<$?' : ; ; :' 8>'
< 8G ' E<9' ; E< : ; :' FC' ? ;' %$?' <=:' ?8=8G <F ;' B%> 9' 8>' 9%
F <$; ; ' 8 '<' $8 < ' E ?%#' E ; ;' ; =: ; ; :' 8 ;' @ ;$%8G9' FC' ? ;'
IG:B ; = '8>' ; %9< % 9' ;' E<9' ; =: ; < ; :' 8' ? ;' ?G9F<=: ;)'
FC' ? ;' @ ; <$; '<=:' @ ; = C'E?%$?' ? ; C' ; =I8C ; :' G=: ; ' ? ;'9?<:8E'8>'
?%9'9 <=:< : ' =9 ;<:'8>'F;%=B'%=IG ; : ' ? ;'$8G= C'E<9' ; = %$?; : '
FC' ? ;' < $?' 8>' ? ;' > 8 <=' < %;90'<=:' 9G$?' E<9' ? ;' %B%:'
:%9$%@ %=;'8>' ? ;% '$< @' ?< '=8 '<=' <@@ ;' E<9'B< ? ; ; :' > 8 ' ? ;'
; ; '=8 '<'@< ?'$8G :' F ;' <$; :'%=' ? ;' >%; :9'8>'$8 ' ; %9< %G9'
<9' $?<9 ;' <=:' 98F; ' =' ? ;' %$; =$;' 8>'<' % < C' %>; ' =8=;'
$8G :' F8<9 ' ?< ' ? ; C' ?<:'9; ; =' ?% '%= 8 $< ; :' E% ?' E%=; 0' ? ;'
89 ' F ; <G %>G '$<@ %A;9'8>' 6 8 ?%$'8 ' <=:<' <$;' E ; ;' 8>>; ; :' 8'
?%9' ; F <$; 90' FG ' ? ;' G =; :' <9%:; '> 8 ' ? ;% '$?< 9'<=:' ? ;'
?G9F<=:' 8>' = 8=%=<' E<9' =; A; '9G9@; $; :' 8>'A%8 < %=B' ? ;' <E9'
8>'$8=IGB<' >%: ; % C ' ? ;' 9@; $ < 8 '<=:' ?%9 8 %<='8>' ?%9' ; M@ 8% 9'
?<9'8F9; A; :' ?< '< %:9' ? ;'@ ; % 9'8>'E< '? ;' E<9' : < %=B' E% ?8G '
<9?=;99' @ G: ; = % ?8G ' >; < '9 8E' 8 ' <@%:' <$$8 :%=B' 8' ? ;'
; M%B ; =$%; 9'8>' ? ;' 8 ; = 0' ?< ' %=0' ? ;' : ; ;@; 9 ' :%9 ;99# ? ;' E<9'
<=% < ; :' FC' ; <' 8 '<@@< ; =' ?8@ ; 0' FG ' ?< ' ? ;' E<9% 8: ; 9 '<=:'
?G F ;' %=' ? ;' 89 ' @ 89@; 8G9' >8 G=; ' C' ?; 9 ; A% G; 9' ? ;'
;V_G< ; : ' ' ; M$; ; : ' ? ;' <=$%; = ' <9 ; 9' 8>' ? ;' % % < C' < '
%$ 8 C ' FC' 9; <' <=:' <=:' < ; =: ; : ' ?%9' < 9' ;' 9GF:G; :'
> %$<' < C ' <=:' ? ;' <: I<$; = '%9 <=:9 0' ; :' <E<C' $<@ %A; 9' ? ;'
9G$$; 998 9'8>'6 ; =9; %$'<=:' ? ; 8 : 8 %$0' >% I; :' 8=9 <= %=8@ ;' E% ?'
? ;'9@8% 9'8>' ? ;% '@< <$; 90' <=:'%=' ? ;'9@<$;'8>'9%0$C; < 9' #8A; ; :'
?< >' ? ;' @C8A%=$; 9' 8>' ? ;' ;9 ; =' ; @% ; ' =' ?%9' >< ;' <=:'
; % '%=' E ;< ?' <=:'@8E ; '? ;' ; <%=; :' E% ?8G '<' %A< ' ? ;' >% 9 '
8>' ? ;' 8 <=' 9GFI; $ 90' ? ;' A8%$; '8>' ; =AC' $8G :' 8= C' <B=%>C' ?%9
:<=B; 8G9' % @8 <=$; 0' <=:' ? ;' ; @; 8 ' %B? ' % @ <G:' ?%9' 8E=
:%9$; =%=B' # % % ' E ?%$?' ?<:' :%9$8A; ; :' <=:' <%9; :' ? ;' B; =%G9' 8>'
; %9< %G9

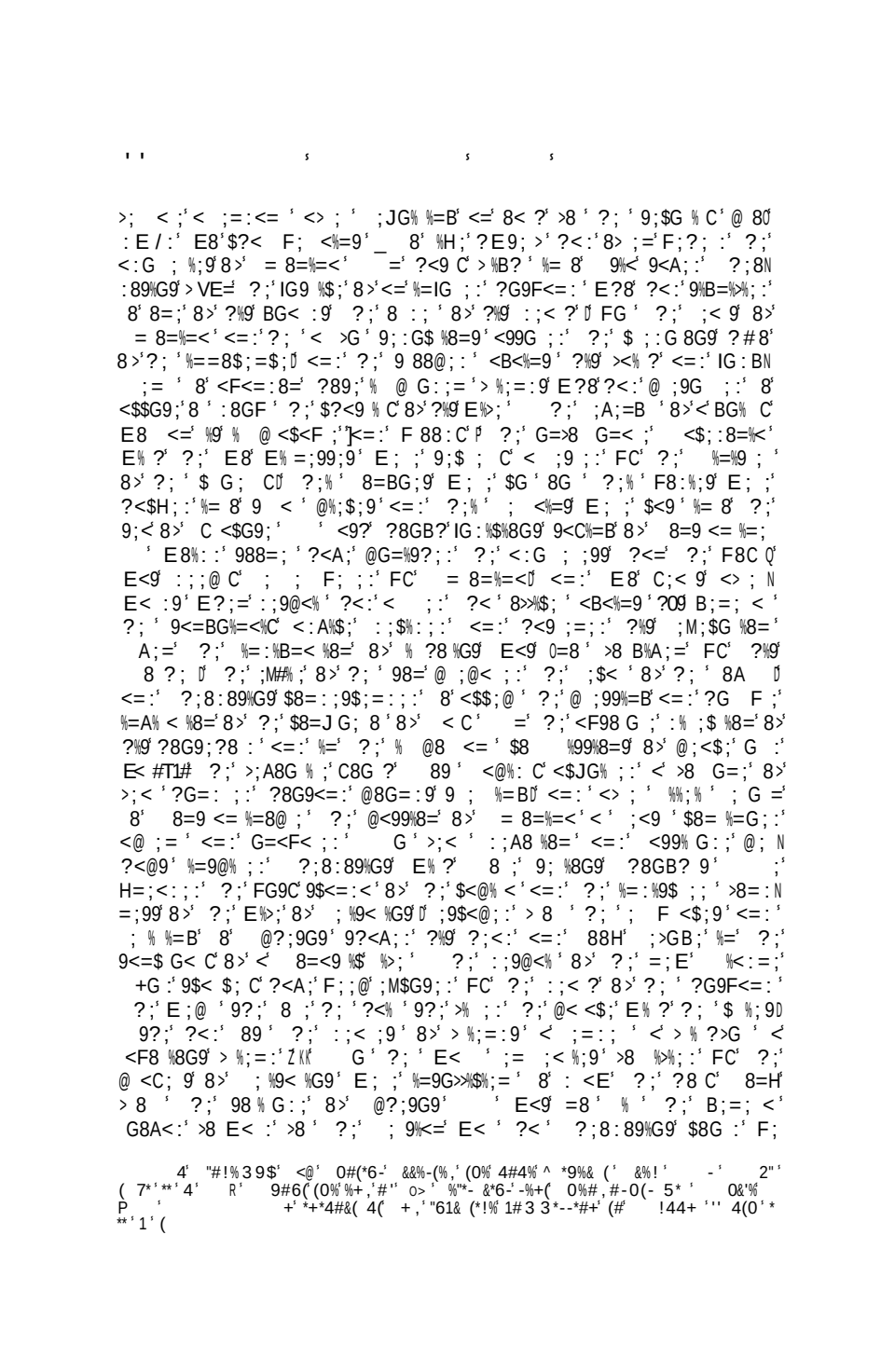
' E<9' ? ;' $G9 8 '8>' ? ;' 8 <=' %G @?9' ?< ' <' 9 <A; '9?8G :
F ;' @ <$; :' F; ?%=:' ? ;' $?< %8 ' 8' ; %=:' ? ;' $8=JG; 8 '8>' ? ;'
%=9 <F% %>C' 8>'>8 G=; '<=:' ? ;' %=>% % %; 9' 8>' ?G <='=< G ; ' 80'
$8k/G9' %=' ?%9' =; $:8 ;9' ?<9'<99G ; :' ?< ' 9; A% ; '<=:' G=B < ;> %'
%.0 ' 5 ;' B; =; 8G9' ; <: ; ' = / C' $<9' <E<C' ?; ' %F; ' FG ' ?; '
; A%: ; =$; ' .' (9' E% '< ?; ;' <0% ?%9' ; 8 C' 0' :' (?; ' E% ' ; =$0

<= C $8=>;99 ?< ' ?;' >< ;' <>%:' ;A;=' ?;' A% G;' 8>' ;%9< G9
; ;' @8 G ; :' FC' ?;' G9 0<=:' $ G; C' 8>' ?%9 E%>;0 <=:' ?< ' ?;'
_; 8 :;9; A;:' <=' <@@; < %8=' E ?%$?' <C' =8 ' : 8@' > 8 ' ?;' @;=
X ?;' :;$;=' ?%9 8 %<=' ?;' 8 ?;' 8>' = 8=%=<E<9' <
;< %$<' @ 89 % G ;' <=:' F8 ?' ?;' >< ?;' <=:' B <=:>< ?;' ;M; 0
I%9;:' <' ?;99< 8=%$<' <=:' 8=9 <= %=8@ ;' ?;' A% ;' ?8GB?' G$ < %A;'
% 8>;99%8=' 8>' $?< %8 ;; 9' =' ?;' A< %8G9 9% G< %8=9 8>' ?;% '
% G=;' 9?;' F;$< ;' ?;' $8 @<=%8=' ?;' ;#>; C' ?;' 9; A<= ' <=:'
?;' ><A8G % ;' 8>' ?;' ; @ ;99 ?;8:8 <' ?' ?;9;' 889;' <=:' < F% %8G9
>; < ;9 ?<:' F;;=' $8==;$;:' FC' 9% % < ' @ ;<9G ;90 ?;C E; ;'
] ;@< < ;:' FC' ?;' I;< 8G9C' 8>' A%$;' <=:' < ' ;=B ?' ;$8=$%;:' FC'
?;' @< =; 9?%@' 8>' BG% ' ;>8 ;' ?; ' < %<B;' E% ?' ;%9< %=9 '
= 8=%=<' ?<:' 8=;' ?G9F<=:' <=:' <=C' 8A; 90 ?8 %G9' ?;' 98=' 8>'
?; ' >8 ;' =G@ %< 9' E<9 8>' <=' <B;' 8' :%9 %=BG%9?' ?% 9; >' < ' ?;'
9%;B;' 8>' <@ ;9 0 <=:' % ' E<9 =8 ' % ' ?;' <G G =' 8>' ?; ' <B;' <=:'
F;<G C' ?< ' 9?;' %=:G B;:' <' 9$<=:<8G9 < <$? ;=' 8' <'
? <$%<=' C8G ?' ?;8:89%G9 ?<:' F;;=' ;:G$< ;:' %=' ?;' G=80 ; %8 . '
%<=' ?; ;9C0 ?;' > %$<=' A8C<B;' E<9 $8=9;$ < ;:' FC' ?;' ']
F<@ %9 ' <=:' <G9@%$%8G9 =< ;' 8>' ?;' >% 9' 98 :%;' E?8 ;' F< H;:' 0
<=:' ?;' @ 89; C ;' E<9 <:8@ ;:' %= 8' ?;' >< % C' 8>' ?%9 @% % G<'
@< ;=9 #&8 ; %9< %G9 <=:' = 8=%=<' ;>8 ;' ?;C' 8G$?;:' ?;'
9?8 ;9' 8>' > %$<' ?%9 ?8 C' H%=:;:';B;=; <;:'%= 8 9;=9G<' 8A;0'
<=:' <9 = 8=%=<' 988=' 8A; ;<@;:' ?;' F8G=:9 8>' 8:;9 C' <=:'
$<G %8=' ?;' 8 <=' B;=; <' E<9 < 8=;' %B=8 <= ' 8>' ?% ' 8E=' :%9N
?8=8G ' " ' ?;%' ;9%:;=$;' <' < ?<B;' ?;' 9G @ %9;:' ?;'
E8 ' ' %=' <' "0 " '$?< F; '98 % < C' E< ' <=:' < 89'
<H;:0 =B;' > <9?;:' > 8 ' ?%9 ;C;9' 5' % ?' ?;' ?; @' 8>' ?%9
C8G=B' <= U' 9<%:' ?;' G=F G9?%=B' = 8=%=<' 5' ' E<9 9;$; %=B' 8G '
89' @ ;$%8G9 ;>>;$ 9' > 8 ' ?;' H=8E ;:B;' 8>' WG9 %=%<= U' ?;'
C8G ?' ;9G ;:' ?%9 B< ;= 9' <=:' ?;' @%8G9 ?G9F<=:' $8=9;=;:' 8'
:%9F; %;A;' ?;' ;A%:;=$;' 8>' ?%9 8E=' 9;=9;9' 8 ' ?%9 @ ;<9%=B'
<=:' @; ?<Ic' A8 G= < C' :; G9%8=' ;%9< %G9 E<9 <E<H;=;:' <'
C= <$G9;' FC' ?;' 8>>%$%8G9 %=>8 < %8=' 8>' <$;:8=%<0 <=:' ?<

0%' ,*"*2%+1%'#' "%3 ++6-' 1#6",' , ,' 96("*((%' (#(0%'#6&'*&-(+,' 3#-(
16&*#6-' 10 4(%&-'#"'(0% +%1,#(%-' '' (0%-%' -(& +2% +%1,#(%-' ' 4 &(3 :'9%
(&6%' 9%1 6-%' 4&#9 9"%W +,' ' 4 &((&6%' 9%1 6-%' *34&#9 9"%' &#1#4*(*-' 36-(
0 !%' 7 ' (0%'#&3%&' +,' (0%" ((%&0%'1#6","-1 &1%":

32* &#1#4*6-'*+-*+6 (%-'^ +%1,#('1'.R'(0 (' $0%+' %'*- &*6-' &%(6&+%,'(#' (":'
' .<R' +(#+*+' $ -'-*>(:' :% &-'#"' 2%' '#&1%,'96(3#&%4#"*(%'1#+-(&61(*#+'
$0*10' &%'%&-' (0 (', (%(#(0%' 3#3%+(' $0%+' 0%' $ -' $&*(*+2 ' // R' $#6",'9%'
1 3 4 (*9"%' $*(0'(0% 3 +0##,'#"' 0#(*6-'^C#(0*1'3'*'1' GR*+' /< ' ;

D0 #3 4 &%'(0% +, "*1' $ &'^3'*'1' H' $*(0'(0% '*%1,#(%-'^1' (R' +,' "%'
3 ++6-'^4' D' <R' 0*-' 3#,%'#"9 4(*-3 "' ,#4(*#+' $ -' &%!*!5'9:' %#'(0%'
40*"#-#40%&



; @ ; :' 8' ; G =' 8' %= ; A
F;>8 ;' ?;' : ;@< G ;' 8>' # %% 8=%=<' ?; 9; >' F8 : C' : %; ; : ' 8'
8A;' <= :' @ ;<9G ;
' @?% 898@?; ' <C' @% C' <= :' >8 B%A;' % ;' %=>% % %;9' 8>' >; < ;'
Y=< G ;' > 8 ' E%=$?' ?;' ;$;%A;9' > 8' ;< ' %= IG # D' FG 0$8F ; @ %F ;'
D%9' ?;' ?G9F<= :' E ?8' >; ; 9' <= :' C ; ' ;= : G ;9' ?%9' 8E =' %=>< C' %=' ?< ' 5'
8>' ?%9' E%>; ' IF 8=%=<' @G 9G; :' ?; ' 98=' E% ?' % @ <$<F ;' ?< ; :' D
<= :' ?;' B< <= ' ?8 %G9' E<9' ;M@89; :' 8' ?; ' ;$; '@; 9;$G %8=9' '
%=' ?;' $< @' F;C8= :' ?;' %B %9' = <B; :' FC' ?%9' 8E =' E 8=B9' <= :'
FC' ?;' :%9?8=8G ' 8>' ?%9' F 88 : ' ?;' $<9 ' <E<C' %=' ?%9' G =' ?;' 9;= %/'
;= 9' 8>' =< G ;' <= :' ;A;< ; :' 8' ; %9< %G9' ?;' G @% G : ;' 8>' <'
E8 <= ' E ?8' ?<: ' A%8 < ; :' < ' ?;' : G %;9' 8>' <' 8 ?; ' <= :' <' E%>; '
8 ' ?;' 9G @ %9;' <= :' %= : %B=< %8=' 8>' ?;' 8 <=' B;= ; < ' ?%9'
>8 ; ' $; : G % C' <@@;< 9' 8' ?<A;' F; ; =' 9%=$; ; D ?;' ; = : S <$; :' ?;'
H= ; ;9' 8>' ?;' 98=' 8>' = 8=%=<' < : IG ; :' %% ' 8' ; ; F; ' ?%9' 8F %='
B< %8=9' < ?; ' ?<=' ?%9' F% ?' <= :' $8=>% ; :' < ' ?;' < < ' ?;% '
?8 C' A8E9' 8>' ;A;=B;' <= :' G G<' : ;>;=$; ' ?;' :8 %=%8=' >'
= 8=%=<' E<9' % @<% ; :' FC' <F9;=$;' D <= : ' E ?;=' 9?;' ; ' ?; ' ?G991
F<=: ' 8=' ?%9' ; G =' > 8 ' ?;' ; 9%<=' $8=>%=; 9' ; %9< %G9' %=' ?%9'
>% 9' <= :' <=9%; = ' ; 8 %8 9' $8=>%=; :' ?; ' @; 98=' <= :' ? ;< ;=; :'
?. ' %>; ' ?8 %G9' E<9' 8 ;' ;98 A; :' 8' @G=%9?' <= :' ;99' @ 8 @ '
8' @< : 8=P ?;' > ; E' 8' @?; 9G9D ;M 8 ; :' > 8 ' <' G9 C' ;G=G$?'
8>' ?%9' 8 ?; ' ?;' >8% ' 8=>;99%8=' 8>' ?; ' BG% D < ;9 ; :' ?; 8#
: 89%G9' <= :' ?%9' ;<9G ;9' ' ?;' $?G $?' 8>' ' W8?=' ?;' @89 ;D
<= :' $8=$; < ; :' ?%9' $<@ %A;9' E ?89;' ;M ;$G %8=' E<9' 8= C' : ; <C; : '
%%=' <' 9;$G ;' <= :' 9;JG;9 ; ; :' >8 ;99' 8>' %$%=<' G$?' <' : < %?B'
8G <B;' <B<%=9' @GF %$' IG9 %$;' $8G :' =8 ' @<99' E% ?' % @G=% C_'
<= :' ?;' $<G9;' 8>' = 8=%=<' E<9' ;9@8G9; :' FC' ?;' ; @ ;99'
E ?89;' ><A8G ' 9?;' ?<: ' : ;9; A; :' FC' ?;' ;$; = ' 9; A%$;9' 8>' ?;' :%9$'
B <$;' 8>' <' @ <;>;$ ' <= :' ?;' ;M% ;' <= :' G : ; ' 8>' <' @8@; ' ' ?; '
; = :' 8>' ?;' $< @<%B=' ; %9< %G9' E<9' ;$< ; :' D ?;' $8 @ %; : ' <9'
G9G< ' E% ?' ?;' @; %<' <= : < ; D %9' %=: ' E<9' =8 ' @ ;@< ; :'
>8 ' ;F; %8=D ?%9' 8F; : %; =$; ' ?8E ; A; ' <: A; 9;' 8' ?;' :%$ < ;9' 8>'
?8=8G ' E<9' $8=98=<= ' 8' ?;' E%9?;9' 8>' ?%9' ?; < D <= : ' E ?; =' F;'
; F <$; : ' ?%9' E%>; ' < ' ?;' $8 <= : ' <= :' @; ?<@9' %=' ?;' @ ;9; =$; '
8>' ?;' ; @ ;99' ?;' ; = : ; ' ?G9F<= :' E<9' : %9@89; :' 8' >8 B%A;' 8 ' 8' D
F;' >8 B%A; = ' ?;' F8G= C' 8>' ?; 8 : 8 <' ;9; A; :' >8 ' ?# ' $8 N
@<=%8=' <' 8 ;' @ ;$%8G9' >%%A8G ' 5' ' ?<A;' >8G= : U' 9?;' 9<%: ' 5 C'
: ; < ;9 ' @< %$%<= ' <' @; <' <= : < ; D %9' %=: ' E<9' =8 ' C; '
F; ; =' A%; E ; :' FC' <=C' 8 <' ; C ; D FG ' ?;' 9%B? ' <= :' ?;' @899;99

' ')ʻ ʻ ʻ ʻ

9%8=ʻ 8>ʻ ?%gʻ I; E ; ʻ < ;ʻ : ;9 %=; :ʻ >8 ʻ Cʻ > %; = : Uʻ gʻ 988=ʻ <gʻ ?;ʻ $G %89% Cʻ <= :ʻ % @< %;=$;ʻ 8>ʻ = 8=%=<ʻ E ; ;ʻ H%= : ; : ʻ ?;ʻ :88 ʻ 8>ʻ <ʻ F; :$?< F; ʻ <gʻ ? 8E =ʻ 8@; = ʻ<= :ʻ 9?;ʻ F ; ? ; :ʻ ?; ʻ A; ʻ E?8 ʻ ?;ʻ : % %B ; =$;ʻ 8>ʻ ?;ʻ ;G=G$?gʻ ?<:ʻ :%9$8A; ;ʻ %=ʻ ?%gʻ 9 ; $; ʻ@ %98= ʻ ; ʻ9% ; = ʻ E8=: ; ʻFG 9 ʻ%= 8ʻ@<99%8=< ;ʻ ; M$ < < %8=gʻ 8>ʻ B < % G : ;ʻ <=:ʻ I8C ʻ <=:ʻ 9?;ʻ =< ; :ʻ ?;8:8 <ʻ ?; ʻ JG; ; = ʻ ?; ʻ ;=;><$;99ʻ <=:ʻ ?; ʻ 9<A%8G ʻ ?;ʻ 8=Hʻ 8>ʻ @?;9GgʻE<gʻ =8%% %9?; :ʻ %=ʻ ?;ʻ @< <$;ʻ E % ?ʻ GMG Cʻ <=:ʻ < F% %8=ʻ D FG ʻ %=9 ;<:ʻ Oʻ<99G %=B ʻ <gʻ ?;ʻ E<gʻ@ 8 %9; :ʻ ?;ʻ$8 <=:ʻ 8>ʻ ?;ʻ 8 <=ʻ< %;9 ?;8:89%G9ʻ ; M@% ; :ʻ %=ʻ ?;ʻ >% 9ʻ>< %BG;gʻ 8>ʻ<=ʻ < 8 8GgʻE= ; A%; E ʻ ?;ʻ B %;>ʻ 8>ʻ = 8=%=<ʻ $8G :ʻ 8= Cʻ F;ʻ <99G<B; :ʻ FCʻ ?;ʻ 9G ; %=BgʻE 8>ʻ?; ʻ9@=ʻ ʻ C8G ?ʻ 8>ʻ$8=9G <ʻ <=H ʻ<=:ʻ<ʻ 9%$H Cʻ$8=9 % G %8= ʻ E<gʻ@G=%9?; :ʻ E% ?8G ʻ <ʻ %< ʻ %H;ʻ <ʻ < ;><$ 8 ʻ <=:ʻ <ʻ 9 <A;ʻ D C; ʻ 9G$?ʻ E<gʻ ?;ʻ $8=9 <=$Cʻ 8>ʻ?%gʻ %=:ʻ ?< ʻ ?8 %GgʻE9G9 <%=; :ʻ ?;ʻ 8 G ;gʻ8>ʻ ?;ʻ 9$8G B;ʻ <=:ʻ ?;ʻ <$Hʻ E % ?8G ʻ A%8 < %=Bʻ ?;ʻ ><% ?ʻ E?%$?ʻ ?;ʻ ?<:ʻ 9E8 =ʻ 8ʻ ; %9< %G9ʻ > ; ʻ ?%gʻ > G% ;99ʻ $ G; C ʻ ?;ʻ 98=ʻ 8>ʻ = 8=%=<ʻ E?% ;ʻ ?%gʻ 8 ?; ʻ>;<9 ; :ʻ E % ?ʻ ?;ʻ ; @ ;99ʻ E<gʻFG %; :ʻ %=ʻ ?; ʻ 9GF ; <=;8GgʻE @ %98=9ʻ E?%$?ʻ<: % ; :ʻ =8 ʻ ?;ʻ :%9 %=$ %8=ʻ 8>ʻ =%B? ʻ <=:ʻ :<Cʻ ;ʻ E %$;ʻ ;9$<@; :ʻ 8ʻ ?;ʻ 89 ʻ A; =; <F ;ʻ 9<=$ G< %;gʻ8>ʻ 8=9 <= %=8@ ; ʻ ?;ʻ $?G $?;gʻ8>ʻ ʻ 8@ %<ʻ <=:ʻ 8>ʻ ?;ʻ % B%=D FG ʻ?%gʻ <G<= gʻE ; ;ʻ %=9; =9%F ;ʻ8>ʻ ; %B%8=ʻ <gʻ8>ʻ@% CD <=:ʻ ?;ʻ?; @ ;99ʻ C8G ?ʻ< %:9ʻ ?;ʻ $ < 8%GgʻE8>ʻ ?;ʻ $; BCʻ <=:ʻ @;8@ ; ʻ E<gʻ E%$;ʻ : <BB; :ʻ> 8 ʻ ?;ʻ< < ʻ 8ʻ ?;ʻ :G=B;8=ʻ %gʻ ?% :ʻ< ; @ʻ E<gʻ 8 ;ʻ 9G$$;99>G ʻ ʻ ?;ʻ ;=:ʻ8>ʻ ? ; ;ʻ C;< 9ʻ ?;ʻ @ 8@?; ʻ `<$?< %<?ʻ 8 ʻ 98 ;ʻ 8 <ʻ > %; = : ʻ %=:%$< ; :ʻ ?;ʻ ;<=gʻ 8>ʻ <=ʻ ;9$<@;ʻ ?;ʻ ; G : ;ʻ ?;ʻ 9@%;gʻ <=:ʻ BG< :gʻ8>ʻ ?;ʻ ; @ ;99ʻ ;<$?;:ʻ ?;ʻ?8 Cʻ9;@G $? ;ʻ8>ʻW; G9< ; ʻ ; F <$;:ʻ ?;ʻ @ 8>;99%8=ʻ8>ʻ< 8=HD <=:ʻ ?;ʻ<FF8 ʻ ?8 %GgʻE<gʻ ; @ 8C; : ʻ<> ; ʻ ?;ʻ : ;< ?ʻ8>ʻWG9 %=%<=ʻ 8ʻ ;$8=$% ;ʻ <=:ʻ ;BG < ;ʻ ?;ʻ $?G $?;gʻ8>ʻ BC@ ʻ ?;ʻ 98=ʻ 8>ʻ = 8=%=<ʻ 9G>>; ;:ʻ < ʻ ?< ʻ <=ʻ ;=; Cʻ $<=ʻ %=> %$ D ?; ʻ@< %;= ʻ ?G9F<=:ʻ % @89; :ʻ 8=ʻ ?% 9; >ʻ ?;ʻ 8 ;ʻ ;MN JG%9% ;ʻ %9; Cʻ 8>ʻA%8 < %=Bʻ ?% ʻ@ 8 %9;ʻ <=:ʻ :;9; %=Bʻ ?%gʻ > %; =:

` 99@<;:<<:' 9< / %<:.%H'8>

=ʻ ?;ʻ 9G$$;;:%=Bʻ $< @<%B=ʻ ;%9< %GgʻE<gʻ <B<%=ʻ 9;= ʻ <B<%=9ʻ ?;ʻ ;%<=gʻP ?;ʻ 9<A;:ʻ ?;ʻ <9 ʻFG ʻ?;ʻ 8>>;=:;:ʻ ?;8:8 <ʻ <=:ʻ @; ?<@gʻ ?;ʻ ; @; 8ʻ ?% 9; >ʻ ?;ʻ < <:Cʻ 8>ʻ WG9%<=%<=ʻ ?<:ʻ ,$8G= ;=<=$;:ʻ ?;ʻ G 8G ʻ8>ʻ?%gʻ:;< ?D <=:ʻ ?;ʻ 8 <=ʻB;=; < ʻ 8=ʻ ?;ʻ 9G@@89% %8=ʻ8>ʻ ?< ʻ@ 8F<F ;ʻ;A;= ʻ9@8H;ʻ ?;ʻ> ;;ʻ <=BG<B;ʻ 8>ʻ <ʻ $% %L;=ʻ <=:ʻ <ʻ98 :%; ʻ %gʻ $8 ;<BG;ʻ GL;9ʻ E?8ʻ $8=$G ;:ʻ %=ʻ ?;ʻ 9< ;ʻ9;= % ;= 9ʻ 89 ʻ?%gʻ <=Hʻ ?%gʻ %F; Cʻ <=:ʻ ?%gʻ ?;< ?ʻ FCʻ ?;ʻ@; 9;$G %8=ʻ 8>ʻ ?;ʻ ; @ ;99D Gʻ ?;ʻ :%9B <$;ʻ 8>ʻ ;%9< %GgʻE<gʻ < ;A%< ; :ʻ FCʻ ?;ʻ :%B=% Cʻ 8>ʻ F%gʻ 8E=ʻ $?< <$; ʻ <=:ʻ ?;ʻ%=N > G;=$;ʻ 8>ʻ?%gʻ E%>;ʻ E?8ʻ %B? ʻ E%9?ʻ 8ʻ ?G ? ;D FG ʻ $8G :ʻ =8ʻ : ;9% ;ʻ 8ʻ G%=ʻ ?;ʻ @< =; ʻ 8>ʻ?; ʻ >8 G=;9ʻ ʻ ?%gʻ ; 8A<

) , 4

C + / 0 $! # 0 F 0 W "0 ! , 0 ; # 0 , " ! , K &' . E ;Z + ' ! . " $ 8 " DJ; E % F \ $! , T#

E H==%0V G ;9 Z08< ;8>@; 98=< # % %g ; < %A; 8 ?; ;8 8 =< >$G %;9 8> <=H%=: ?;<9@% %=B ;>>F g 8>B;=%G9g 8 A% G; III <$ %A; 8 9@;$G < %A; %>; < ; ;<9G ;:=8 98 G$? FC ?;% ;< ; ;A< %8= <g FC ?;?;%B? 8 E?%$?? ;C <9$;=: <F8A; ?; ;A; 8> ?;% <B;8 $8G= C0 <=: ?; < ;9 < G ; E?%$?% =< @;8@ ;8>B%<= g E8G :@<99G==8 %$;: G9 <@@;< 8=9@%G8Gg %= < <$; 8>@CB %;9 ;8=%:<g <=: ?%g ? ; ; ?G=: ; :$8 @<=%8=g : ;A8 ; : ?;% %A;g < ; ?; =<8@C 9;0 FG ?; ; :G$< %8= 8> ?; %=><= ? ; F8C <=: ?; <= ?<: @ ;@< ; : <=: < 89 ;=9G ; : ?%g ; 8 <F ;9<$ %>%$;0 <=: < ? @< <= E8G :<@@ 8A; < ?; ?<= <: % ; <= <$ 8> :G C 8> E?%$?? ?% 9; > <=: ;%B? ?8G9<=: 8> ?%g >; 8E0$% %L;=g E; ; ;JG< C $<@<F ; # ?; B ;< 8 @;C %B? %=9$ %F; 8= ?%g 8@?%;9 ?< ?; ?<: : ;>;< ; :%= F< ; E@ % %8=g 8> ;=; %;g %: ; :G$; : >% ; ;= ?G=: ; :$ %;g > 8 ?; <H; 9;8 %g 8 ?; ; :; <0 1 F= ?; >8 G=; 8> 8 ; > ; E F;>8 ; ?%g ;<B ;90 ?; =< %8=g E; ; 8@@ ;99; FC >%; 8E= >;< 90 <=: ?; %=A%=$%F ; ;B%8=9E?%$?? ?; $8 <=: ; :?<: F; ;= >8 ; : FC ?; ?<F% g 8> $8=JG;9 <=: ?; : %9$%@ %=; 8> <B;9 = ?%g A%; E ?; $?< N <$; 8> ; %9< %Gg <C F; : ;9; A; : C @ <$; : <F8A; ?; ?; 8;9 8> ?; <=$%; = ;@GF %$9 Ig % @; >;$ %8=g > 8E; : > 8 ?;

* ($ *"" 9% 4"% -(*&% ^& ((-8 ((# &% , %&#,#(6- ^3 !** 1 *<. L) / /G -R 0% 1#+!%&- (*#+ #" %&>%- +, 7 %3 & (6- (0%&3#4:" % *- #+%# *" 6*1 3#-(*+(%&%-(*+2 +, 3#& " -1%+%- *+ 0*-(#&: ((! (0% (#&(% #" (0% & : " 4 &(+(#5 10#", $*(0 +5*-0 +, &%3#&-% (0% !*&(6% #" 0*-1#! 3(&: 0 %% (00 4&#6, *+-1&*4(*#+ *+ "*+:^ *-((6& ** D@R A%$ 3%+0 !% 3#&% % i F6*-*(%:(%-(%, #" 2"#&: +, , *-2& 1%J +#& 1#6", 6!%+ " ^ (*& > R 4&#,61% 3#&% -(&*8*+2 %> 3)5 #" (0% ! *1*--(65 #" '#&(6+% +, 5 ! +*(: '' 063 + $*-0%-

$8= <B%8=' 8>' ?;' % ;9D ?%G A% G;G0E; ;' ?%G8E=' ?;'> ;;' B%>' 8>' =< G ;' 8 ' ;> ;$ %8=D ?;' <%9;:' ?%=%9; >' E% ?8G ' <' <9 ; ' 8 ' <' %A< D <=:' 98' %=<:;%IG< ;' >;' ?;' < G $8 % ;:' 8' ?%G ?<=:' ?< ' ?%G 98 ;' <:A<= <B;' <G :; %A;:'> 8 ' ?;' @ %:;' %:' @ ;9G @ %8=' 8>' ?%G <:A; 9< %;9' =:; ' ?%G $8 <=:' %%;' 9GFI;$ G' 8>' WG9 %=%<=' 8> ;=' :;9; A;:' 8' F;' $< ;:' 8 <=9D FG ' ?;' G=E< %H;' <@@; < %8=' 8>' 6 ;;HG' E<G % @89;:' <G' <' ; '8>' ;@ 8<$?' FC' ?;' ?<GB? C' 6 8 ?9D E?8' <>>;$;:' 8' F G9?' ?< ' ?;C' G9 ' :%9@G ;' ?;' H B:8G%' 8>' < C' E% ?' <' % %8=' 8>' <B;:%<=9' @<= 8 % ;9' <=:' @% < ;9 T' ?;'$ % < ;' 8>' 9%<' ?<G' %=:;:' F;;='>8G=:' ;9G' $8=B;=%<' ?<=' ?< '8>' G 8@;' 8' % % < C' 9@% % D ?89;' @8@G 8G9' $8G= %;9' E; ;';=; A< ;:' FC' GMG C' :;9N @8 %9 ' <=:' 9G@; 9 % %8=D <=:' ?;' 8=H9' E; ;' 8 ' ;M@;=9%A;' <=:' 8 ;0=G ; 8G9' ?<=' ?;'98 :%; 9'8>' ?;' <9 ' ?;' ;BG <' >8 $;' 8>' ?;' ; @% ;' ?<:' 8=$;' < 8G= ;:' 8' 9%M ?% :;:' <=:' >8 C0>%A;' ?8G9<=:' ;=P % ' E<G' ;:G$;:' %=' ?;' % ;' 8>'W@9 %=%<=' 8' 8=;' ?G=: ;:' <=:' >% C' ?8G9<=:D <=:' ?%G' =G F; 'W< B;'<G' % ' <C' 9;; ' E<G' ?%= C' 9$< ; ;:' 8A; ' ?;' 9;<' <=:' <=:D %=' @<%=' <=:' < C ' %=' > %$<' <=:' BC@ ' 8=' ?;' F<=H9' 8>' ?;' <=GF;' ?;' 8<9 ' 8>' ?;' GM%=;' <=:' ?;' > 8= %;=G' 8>' ; 9%<' ?;' $% %L;=' E<G' ;M?<G9 ;:' C; ' ?;' 98 :%; ' E<G' G=@<%:D ?%G' @8A; C' E<G' %9$?%;A8G9 C' 988 ?;:' FC' ?;' @ %A% ;B;' 8>' <@%=;' <=:' %=:8 ;=$;D <=:' ?;' < :C'@<C ;= 9' E; ;' :; <%=;:' <=:' %=N ; $;@ ;:' FC' ?;' > <G:' 8>' ?8b;' <B;= 9' E?8' =9G%@' % ?8G%D $8G <B;' ':<=B; ' ?;';; 8 G ;= 9' 8>' E< ' GF %$' @ %A< ;' :%9 ;99' ;$ G% ;:' ?;'< %;9'8>' ?;'9 < ;'D FG '%=' ?;' >%; :'<=:' 9 % ' 8 ;' %=' ?;' @ ;9;=$;' 8>' ?;' ;=; C' ?;% ' =G F; 9' E; ;' < E<C9' :;>;$ %A; ' ?;' E<=' 8>' =< %8=<' 9@% % ' E<9' 9G@@ %;:' FC' ?;' @ ;$< %8G9' ><% ?' <=:' :%98 :; C' 9; A%$;' 8>' < F< %<=' ; 0D $;=< %;9' A;=' % % < C' ?8=8G ' E?%$?' ?<9' 8> ;=' 9G A%A;:' ?;' 899' 8>' A% G;' <=:' > ;;:8 ' E<G' < 89 ' 8 < C' ;M %=$ ' ?;' B;=; <9' E?8' E; ;' G %@ %;:' F;C8=:' ?;' ;M< @ ;' 8>' >8 ;' % ;9' <F8G ;:' 8= C' 8' @ ;A;=' ?;' 9G$$;99' 8 ' 8' 9G C' ?;' ;1' @G < %8=' 8>' ?;% ' $8 ;<BG;9D <=:' ?;C' ?<:' F;;=' <GB? ' FC' ;M@; %;=$;' ?< ' %>' ; %' 98 ; % ;9' @ 8A8H;:' ?;' I;< 8G9C' ; 8 '# %8 ' ;A;=' BG% ' E8G :' 8F <%=' ?;' %=:G B;=$;' 8>' <' B <$%8G9' ; @; 8 # =' 9G$?' <=' <B;' ?;' %G @?9' 8>' ; %9< %G9' <=:

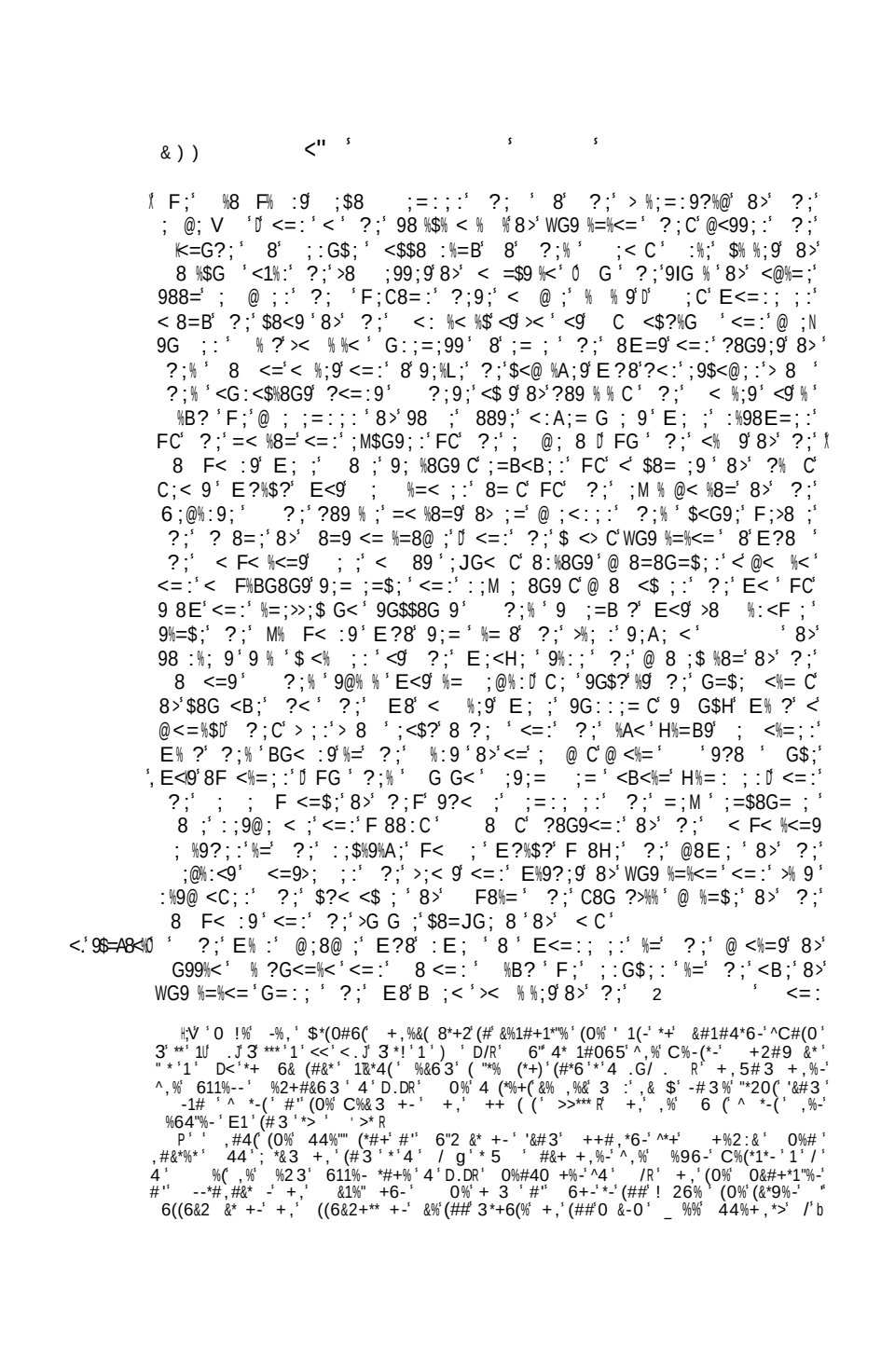
1 ' ' ' ' (1 8 ' 8G ; 8' ; < '' (* ' ' 8 ' > %C</ %O^ %X' = ' > 7 *$ O*-' " -(' %4*(0%(#"' &#1#4*6-' *-' (## +#9":' (& +-" (%' 9:' 4*& (%-U + ! '" (0*%!%-' *-' (0%' 4&#4%&' #&,U -(&*4'5&-#"' 2 &3 4(- %*JO%&' '#&++ ')6&:' #&' *+-6"(^7%3#-(0%+%-' 1#+(& ' #+#+' *+' %*-8%' & (#&' C&(%1' (# (+ 4 ' 9-)$D]

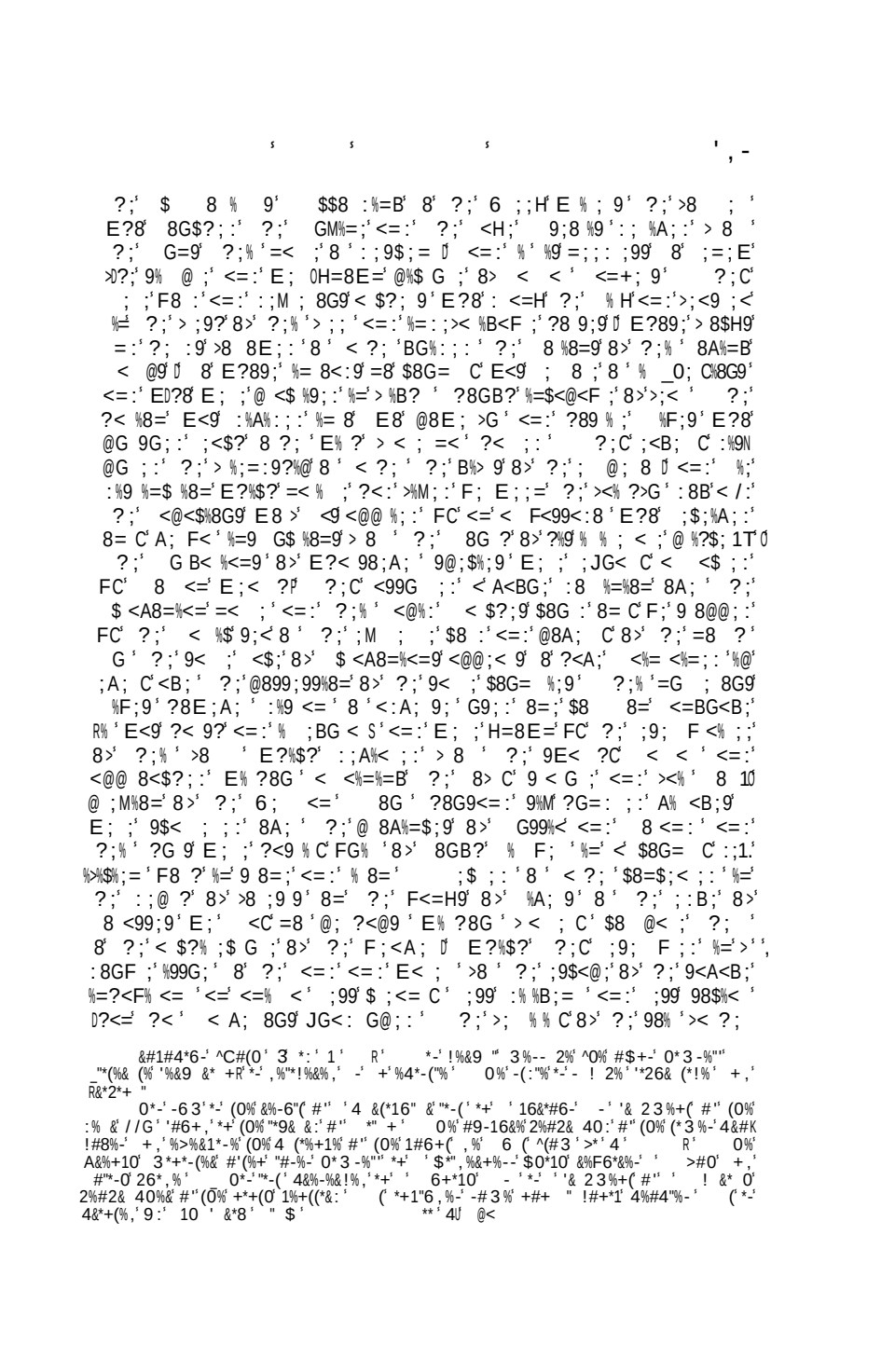
O %%'(0%'(0*&,' +,'' '#6&(O 9##8-' #"' (0%' C#(0*1' &J (0%'$&*(%&' #"' (0%' +%1,#(%-' 3#(22& ! (%'()*%-%' 96-%-

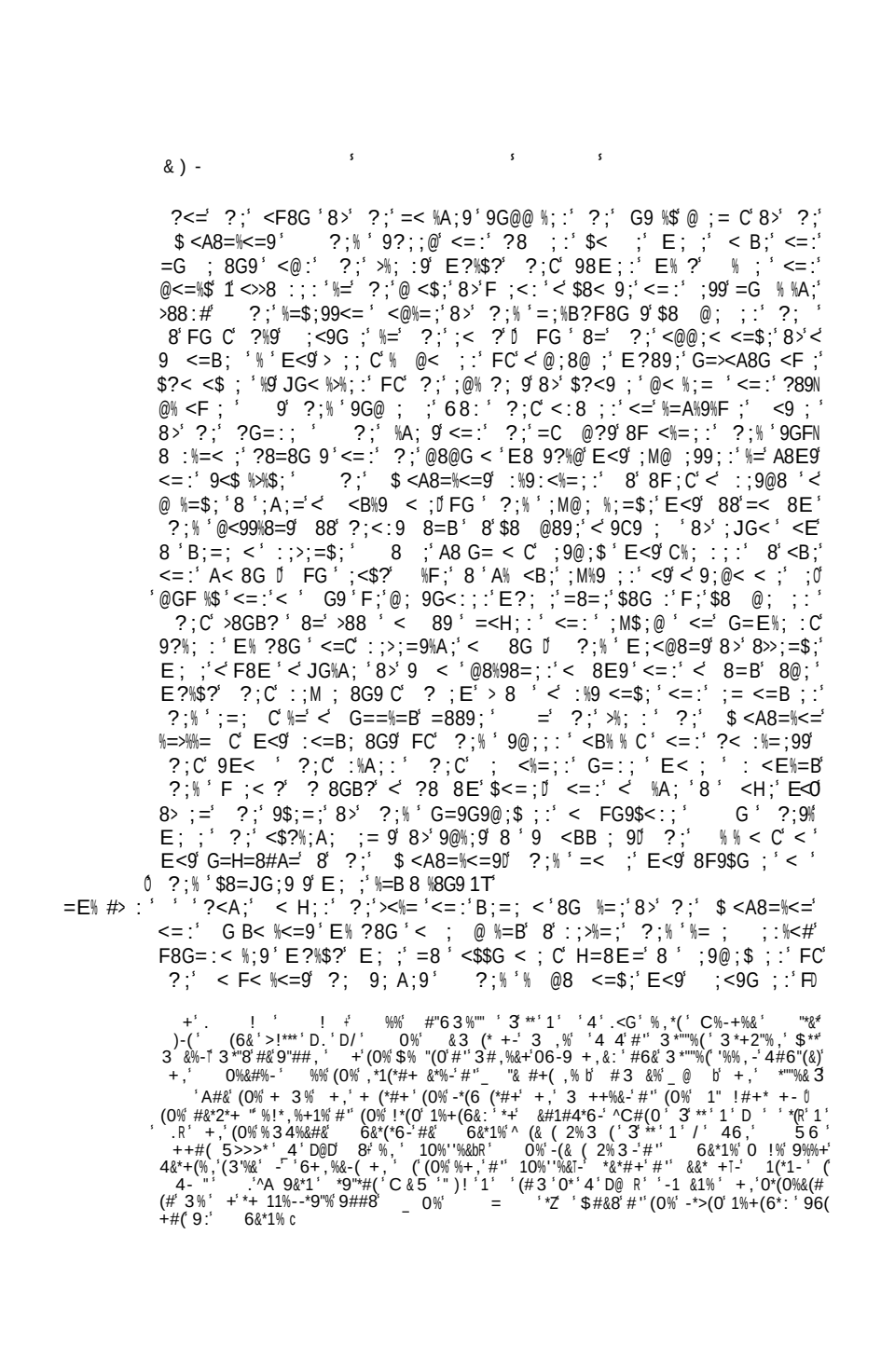
' , 3 @

<> ; E< :9 8 9 ; 9 9F%=; E% ? %=$8 <F ; G9 ; FG ? ; C
< ; ; =; 8 @<99; : , E% ? ? ; : < H; 9 < : ; 9 8 : %9B <$; <= : ,$< < % C ?% ; ? ; %; G ; =<= 8 WG9 %=%<?9GF: G; : ? ; H%=B: 8 9 8 ? ; 6 8 ?9 <\=: <= : < 9 ? ; ; @; 8 T % %: ?8GB?
< F% %8G9 F< <=$; : ? ; >8 $; 9 8 ? ; < F< %<=9 >8 ; = ; : ? ; % : %A%9%8=9 FC > < ; C <= : >< 9; ?88 : ' <= : %=A% ; : FC ?%9 @< %; =$; <= : %F; < % C ? ; ; @; % %8= 8 >%=IG %; 9 T ? ; H; C9 8 < ?<B;
8 ; <= : <A; ==< E; ; @ ; 9; = ; : 8 ? ; % $8=JG; 8 E?% ; = %8$? E<9 : ; 9 8C; : FC ? ; ; 9%<=9 <= : WG9 %=%<= ; F ; : >8 ? ; 9<>; C 8 > 8=9 <= %=8@ ; %
((%#"(*(# A; = ? ; 6 8 ?%$ A%$ 8 %; 9 8 ; 9%< %G9 E; ; @ ; IG : %$%< 8 ? ; 9 < ; 9%=$; ? ; C <F8 %9?; : ? ; % @8 <= F< ; 8 > ? ; @@; <=GF; E?%$? ?<: F; ; = 98 ><% ?>G C BG< : ; : FC ? ; 8 : 8 %$ <= : ?%9 : <GB? ; 8 ? ; : ; >; = $; 8 > < C ? ; 6 8 ?9 ; A<$G< ; : <==8=%< <= : 8 %$G E?%$? ; C ; > % = < @; <$; >G <= : > 8G %9?%=B $8= : % %8= ? ; 98A; ;%B= C E<9 $ <% ; : FC ? ; ; @; 8 # ? ; 8 <=94 ? ; <$ G< @899; 99%8= E<9 <F<= : 8=; : 8 ? ; F8 : =; 99 8 > ? ; >% 9 % =A<: ; = ? ; 8@@89% ; F<=H9 8 > ? ; <=GF; ? ; @ <%=9 8 > @@; G=B< C <= : ? ; <=9C N A<=%= ? % 9 E; ; @899; 99; : 9%=$; ? ; : ; < ? 8 > % < FC ? ; H% ;@% ; %F; 9 8 > ? ; 6; @%: <; T1# E?8 ;9@; $; : ? ; 6 8 ?%$ < 9 <= : : ; 9@%9; = 8 %=: ; ; : ? ; B8 : 8 > ? ; 8 <=9 FG ? ; 9; $; 8 %A; 8 > ? ; % <==G< 9GF9%: %; 9 ? ; A<$<= >8 %>%$< %8=9 8 > ? ; %A; E; ; %=9 <= C 8$$G@%; : FC ? ; 9; < F< %<=9 ? ; % 9 <= : < : 9 E; ; @ <= ; : 8= ? ; E< 9 8 > % %G <= : ; B <: ; <= : ? ; % 8=%$< 8=; 8 > ? ; % <@8 8BC <BB <A< ; : ?%9 %=9G 8=
? ; <I; 9 C 8 > ? ; ; @% ; 5 8 ; M ; =9%A; <;9< ; C8G : 8 %=%8=9 98 =G ; 8G9 < ; C8G $% %; 9 ? < C8G < ; $8= %=GN < C 9; ; H%=B >8 =< %8=9 8 E?8 ; % ?; % = @; <$; 8 E< C8G <C ; %=JG%9? ?; 9; G9; 99 @899; 99%8=9 ?; 6; @%: <; < ; C8G F <A; <= : ><% ?>G < %; 9 <= : % > ? ; C ?<A; <= %$%@< ; : C8G B%> 9 ? ; C ?<A; 9?; E= <IG9 $8=>%: ; =$; %=C8G F8G= C U ?; % @ ; 9G @ %8= = ' ; M$G9; : FC ? ; 8 : ; 8> E?%$? WG9 %=%<= ; F <$; : =9 ; <: 8 > <99; %=B ? ; %B? 9 8 > 098A; ;%B= >8 ? ; @ 8 ; $ %8= 8 >?%9 9GFI; $ 9 ? ; ; @; 8 %=A% ; : < 9 <=B; @; 8@ ; 8 %=A<: ; <= : @899; 99 ? ; 8 <= @ 8A%=$; 9 F; E; ; = ? ; <=GF; <= : ? ; I= <= : ? ; < F% %8= 8 > ?W 6; @%: <; E<9 $?; $H; : FC ? ; %9 B @8E; <= : >< ; 8 > ?

I 2 (0* - 3 g 4 /@ /Ej1 .]J %'1#**'+%-'(0*-' $% 8+%--' #'' (0% %3 4%&#& +, ' 3 % %*'*4*&% (# (0% #", ' 2% '#'' 6-(*+* +' J 96(' " -ċ 0% $ -'+%!%& :#6+2
S 0*-' 3*-10*%!#6-' 4#"*1: ' $0*10 &#1#4*6-' ^ +%1, #(' 1 ' 0 R *3 46(%-' (# (0% %+"4%&#& ' *-' &%!% "%, ' *, ' 0*-' %4*-("% (# ' 1: (0* +' 4&*+1% ' $0 # $ -'1 4 9"%' #'' 6+, %&5 -(+, *+2 *(' *&4#$ Z & >*!#!# & #!' - :-' 2 (6 -'& ' 4 ' @G @ ' _1 ' D.bR
S05' 0% E ' #'' (0% C%4*, % -%% 3 ' -# ' & -' #6& %!*, %+1% 2#%- ' (# 0 !% 9%%+' 1#+'*+%, ' (# " [: 5 ' 0%*& -$:' 3 :' 0 !% %>(%+, %, ' % -(#'' (0% 0%*-- ')







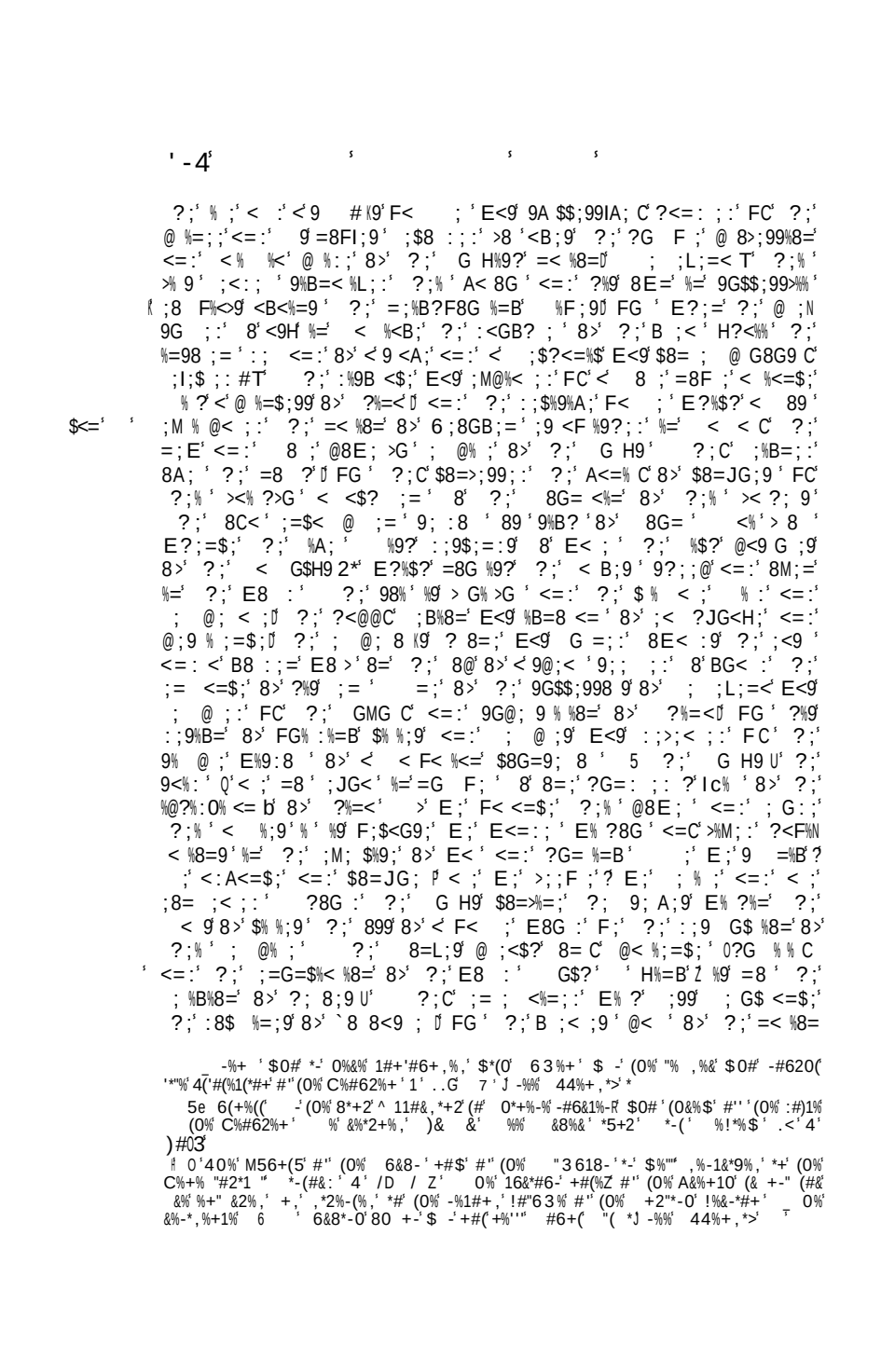
W%%9 8IC ? ; E8 H E ?%$? ? ; ; @ ; 8 <%9 ; : >8 ? ; @ 8 ;$ %8= FG < ? ; ; M@ ; =9 ; 8> ?%9 9GFI ;$ 9 9 ; A ; : 8= C 8 : %9$ 89 ; ? ; E ; <H= ; 99 8> 98 ; = ; B ;$; : @< <= : ? ; E< 9 E ?%$? FC > < ; C ?< : F ; ; = : ; ; ; : % @ ; B=<F ; E ; ; % ? ; : ; 9 ; ; : FC ? ; B< %98= 8 9$< ; : FC ? ; <%F< %<=9 ? ; ; ?8G9<= : $ <A8=%<=9 E ?8 %=98 ; = C : %A% : ; : ? ; 9 ; A ; 9 %= 8 E8 F<= : 9 : %9$8A ; ; : ? ; E ; <H= ; 99 <= : %9 ; C 8> < %G @?<= ; %B= ? ; C @<99 ; : ? ; <=GF ; <= : ? ; ; F G9 A<=JG%9? ; : ? ; 8 <= B ; = ; < 9 E ?8 : < ; : 8 8@@89 ; ? ; % @ 8B ; 99 <= : @ G=N : ; ; : E% ?' % @G=% C ? ; $% %; 9 8> C %$G <= : ? <$; ; <$?' 8> E ?%$?' ?< : < 9 <= : =G F ; 9 8 8A ; E ?; ? ; % 0$8= ; @ %F ; <99<% <= 9 ?< ; A ; @ <%9 ; ? ; F8 : = ; 99 8> ? ; $ <A8=%<=9 <C : ; 9 ; A ; % % %9 9G %; : FC ? ; <= 8= <= : : ; %F ; < ; $ G ; C E ?%$?' ? ; C < ; <$$G9 ; : 8> ; M ; $%9%=B 8= ? ; % @ %98= ; 9 % ?8G : %9 %=$ %8= 8> <=H 8 <B ; 8 9 ; M ? ; $<@ %A ; 9 E ; ; % @< ; : 8 > <C ; : < %A ; 8 G9@ ; = : ; : F ; E ; ; = >8G @89 9 <= : F ; < ; = E% ?' $ GF9 % ? ; C ; M@% ; : 8 % =$ 89 ; : %= 98 ; 9@<$%8G9 FG % : %=B <= : ; > 8 @ ; %9?' %= ? ; > < ; 9 E% ? ? ; 9@8% <= : $< ; E ?%$?'] %B? % @ ; : ; ? ; < $?' 8> ? ; 9 ; 9<A<B ; A%$ 8 9 ; ?<@9 < 8 ; % @< %< = < < %A ; E8G : ; : G$; ? ; =G F ; <= : JG< %>C ? ; =< G ; 8> ? ; 9 ; ?8% %: <$ 9 <= : ? ; C %B? 8 ; % ; 9 F ; ; M$G9 ; : FC ? ; $ G ; <E9 8> ; < %< %8= = ? ; 9%; B ; 8> 8@% G9 1 ?89 ; 8F9 %=< ; : ; > ; =$; ?< : ; = <B ; : ? ; $ <A8=%<=9 ? ; C <99<$; : >% ; ; > ? 8G9<= : < ; 9 FG ? ; C 9@< ; : ? ; E8 ; = <= : $?% : ; = ? ; 89 A< G<F ; $<@ %A ; 9 E ; ; < E<C9 ; 9 ; A ; : >8 <F8G 8 <=9 4 ? ; 9 ; A% G : ; E<9 =8 %B8 8G9 <= : ? ; ; 9 8> ? ; % : ; %A ; <=$; E ; ; 9@ ; ; : C <= : 8 : ; < ; G ? ; 9GFI ;$ 8 ? ; ?%9 8 %<= 8> WG9 %=%<= ; M?< ; : F%9 IG9 %= : %B=< %8= %= ? ; <=BG<B ; 8> $8 @ <%= <= : ; @ 8<$?D <= : 8$8@%G9 ?<9 $8=>% : ; = C <>% ; : ? < % = < ; %B= 8> ? % C0 E8 C ; < 9 ; <$?' " %= 8< : 8> ? ; < F< %<=9 $8=9G ; : E8 ?G= : ; : ?8G9<= : 8> ? ; <F% <= 9 8> ? ; 8 <= ; @% ; ? ; ; = % ; @8@G < %8= 8> G H%9?' G 8@ ; E ?%$?' = ; < C $8 ; 9@8= : 9 E% ? ? ; @ 8A%=$; 9 8>WG9 %=%<= E8G : @ ; ?<@9 F ; %=$<@<F ; 8> 9G@@ C%=B b%M % %8=9 8> @ ; 98=9 ? ; ; 9G 8> ?%9 %=$; : %F ; ; 9 % < ; #0 #

' *)%' &G%"(%-' #"' (0%' 1" !#+* +-' &%' &%" (% ,' #& 3 2+*'*% , ' 9 : ' &#1#4*6-'^C#(0 ' 3 *** ' 1 ' D ' < R' A#&' (0%*&' 3 *" , ' +, ' "*9%& "' 9%0 !*#6&' (#' (0%*&' 4&*-#+%&-' $ %' +(: ' 44% "(#' (0%' 6(0#&*(: ' -#3 %$0 ' (3 #&%' &%1%+(' #"' (0%' % 3 4%&#&' 05 6&*1%' ^ (& (2% 3

0 #4&6-' $ -' -*(6 (%' +% & 0*"*44*' *0 0& 1% ' #& 1% , #+* ' #44#-*(%' (# (0% *-"%' #"' 0 -)- ' ($%"!%' , :-0)#6&+%:' '&#* ' #+-(+(*(Z#4"%' ^5%"" &*6-' (# 3 ' *' 4 ' @

11#& , *+2' (# (0%' 3 "%!#"%+(' (%-(*3#+:' "' (0% +%% , #(%-' ^1 ' 5 R' (0 5 ' *0 $, -' 0 , ' &% , 61% , ' (0% 4&#!*+1%-' -#6(0 , +' ('*% +$9% (#' (0%-(+(%' #"' ' 1 : (0* +' $*", %&K +%-- '

?



<$JG%;9$;:' E% ?8G' %=JG% C' %=' ?;' 8@G:8=<' 8' E ?;' %=' ?;'
@ <$ %$;' 8>' ?;%' <=$;9 ;89' ?;' ?V=08%9 8>' <<$ %>%;;' E; ;'
;9; A;:' >8' ?;' 9G@ ; ;' :;% C ?;C' <: ?8E ;:B;: #' %=' 8:;'
%C=<=9' ?;%' 8F %B< %8=9 8' ?;' <%' ?;' >% ;' ?;' E< ; ' <=:' ?;'
;< ?' <=:' ?;%' @ %;9 9 ;:; %A;:' 98<<;' @ 8>%' >% 8' ?;' < ' '
:%A%=< %8=' ?;@' G=E % ;=' <E9 E; ;' %B8 8G9 <=:' % @< %<'9
> %;>' E<9 @G=%9?;:' FC' <' ;=>8:' ;9 % G %8=' ' <:G ; C' ;<98=' '
>8:' G :;' E% ?' :;< ?' <=:' =8 $?<9 %9; ;=' $8G :' F;' %=>8$;:'
88 9;A; ;' >8' ?;' < ;' <=:' %=;M@%<F ;' BG% ' 8>' $8E< :%$;' 9
?;' 9GFI;$' =< %8=9 < $?;:' G=:;' ?;' 9 <=:< :' 8>' ?;' G H9'
?;%' $<A< C' F8 ?' ;=' <=:' ?8 9;9' ; ;' @ 8G: C $8 @G ;:' FC
% %8=9 8=;' 8>' ?;%' ;>>;$ %A;' < %;9 $8=9%9 ;:' 8>' >8G' ?G=: ;:'
?8G9<=:' 98 :%; 9' <=:' %=' ;99 ?<=' >%> C C;< 9 ?;C' E; ;' $8=N
=;$;:' %=' @;<$;' <=:' E< ' E% ?' ?;' 8 <=9' ?;' %>;9%<=9' <=:'
?;' ?%=;9;' =' ?;%' =8 ?; =' % %9' 98 ;' A;9 %B;' <C F;
:%9$8A; ;:' 8>' ?;' >8 ' <=:' 9% G< %8=' 8>' c< $?< H<' 8>' @;8@ ;'
8>' ?G= ; 9 <=:' >%9?; ;=' E?89;' 9 ;:B;9 g; ;' : <E=' FC' :8B9'
<=:' E?89;' ?<F% < %8=9 E; ;' FG %;:' %=' ?;' ;< ?' ?;' G H9
E; ;' %B=8 <=' 8>' <9 8=8 C FG' ?;' 8F9; A< %8=' <H;=' FC'
98 ;' ;< =;:' ?%=;9;' E% ?' <' B=8 8=' 8>' ;%B?' >;; ' >%%$;9 ?;'
8C<' $< @' %=' ?;' < % G:;' 8>' >8 C0=%=;:' ;B ;;9' <=:' < H9
?;%' ;M ; ;' @ 8B ;99 E% ?%=' ? ;;' 8' < ;<9' ;=' ;:' ;B ;;9 8>'
' ?;' @8 < ' $% $; 8=B' ?;%' 98G ?; =' $8=JG;9 9' ?;' 89'
'9@ ;=:%:' E<9 ?< ' 8>' ?;' ;@? < % ;9 8' E?% ;' G=9' <' @8 % ;'
<=:' E< 0 %H;' @;8@ ;' E?8 @899;99;:' ?;' $8 ; $%<' $% %;9 8>'
% 8;?< <' <=:' < < $<=:' E?8 ?<:' A<=JG%9?;:' ?;' ; 9%<='
=?8=< $?' <=:' $< %;:' ?;%' A%$ 8 %8G9 < 9 <8=B' ?;' F<=H9' <=:'
,@; ?<@9 8' ?;' 8G ?' 8>' H;' =:G9' =' ?;' 9%:;' 8>' ?;' E;9 '
?;' G H%9?' $<A< C' <:A<=$;:' 8' ?;' <H;' <;8 %9' ?;C' @<99;:'
?<' <H;' 8=' ?;' %$;' ?;' H?<=' E?8' :E; ' <' ?;' >88' 8>'
8G=' <%' %99G;:' ?%9 $8 <=:9' >8' ?;' 9%;B;' 8>' 89@?8 G9 #'
<' $% C' ?;' A8 G= < C' 9GFI;$' 8>' 8 ;' <=:' E?89;' @ %=$;9' ?<:'
>8 ; C' F;;=' %;' > %;=:9' 8>' ?;=9 1# 8' ?;' ;<9' ?;' G H9'
%=A<:;:' ?%=<' <9' 8> ;=' <9' ?;' A%B8G' 8>' ?;' B8A; = ;=' E<9

'%,%"#6' 4' . / ' 0%' ' 1(' (0#620' *(' -(&*1("':' 9%"#+2-' (#' ' -6"$&', (('*
+,' -611%--*!%' (&*9%' 3 :' 9%' *+(&#,61%,' 0%&%

(&#1#4*6-' %&-*1' '*' 1' D' J 3' **' 1' <' %:--#++%'* ^ 9-%&! (*#+-' -6&' "%-'
%64"%-' &9 &%-' 4' ' GG' ,%'*+%-' (0%' ,*-(+1%' 9%($%%+' '' ' +,' (0%' # '
#-40#&6-' (' >!*' "#+2' &(&' "% 26%-

' &2 %%'*+' ' %3#*&#"' ',%' #(%' ^ ,3' ,%' T 1, 3*%',%-' +-1&*4(*#+-' (#3'
^('*' 4' &-'* RR' (0%' +1*%+(' 8*+2-' +,' 3%, "-'#" (0%' *3 3%&* +' #-40#&(" ¢ +,'
d%' 2 3 3*,%' #" (0%+-' *+' (0% & (*#+' #" 7%3#-(0%+%-' 2 *+-(' (5(*+5' ^'*'(
& (#&' & -1' (#3' *' 4' . ' . @R' ;

; <M; :' D <=:' < ' <GB? ' 8' ;<:' %=' ?;' ?%9 8 C' 8>' ?;' % ;9 '
?< ' ?;C' 8E;:' :8E=' ?;% ' @< %;= ' ;=; %;9' %H;' ?; @' 8 '
B <99D' <=:' ?< ' ?; <=:< %=9' <@@ <G:;:' ?;' E%9:8 ' 8>' <='
; @; 8 ' E?8' ;@G 9;:' ?;9;' < F< %<=9' E% ?' B8 :;=' <=$;9 '
?%9' ;M9 ;=' 8>' 9<A<B;' ; @% ;' $8%=@; ;:' ?;' G H%9?' 8=< $?'
8' ;9 <F %9?' ? ;;' 9GF8 :%=< ;' @ %=$:9' 8>' ?%9' 8E=' F 88:' E?8'
988=' >8 B8 ' ?;% ' B < % G:;' <=:' < ;B%<=$; ?;' $8=JG; 8 9'
E; ;' ;=; A< ;:' FC' GMG C ' E?%$?' %9' < E<C9' >< <' ;M$;@ ' 8' <='
%=:G9 %8G9' @;8@ ;' D ?;' @8 %$C' 8>' ?%=<' 98 %$% ;:' ?;' E<=JG%9?;:'
=< %8=9' 8' ;9G ;' ?;% ' %=:;@;=:;=$;D' <=:' ?;' @8E; ' 8>' ?;'
G H9' E<9' % % ;:' 8' <' @; %8:' 8>' E8' ?G=:;:' C;< 9' ?;' ;N
A%A<' 8>' ?;% ' =< ;' <=:' :8 %=%8=' %=' ?;' 98G ?;=' $8G= %;9' 8>'
9%<' <;' ?;' ;A;=9' 8>' <' <;' <B;D' <=:' ?;' :C=<9 %;9' E?%$?'
9G$$;:;:' 8' ?;% ' =< %A;' ;< 9' <C' 9 ;;@' %=' 8F %A%8=' 9%=$;'
' ?%9 8 C' F;< 9' =8' ; < %8=' 8' ?;' :;$ %=;' <=:' >; ' 8>' ?;'
8 <=' ; @% ; TT

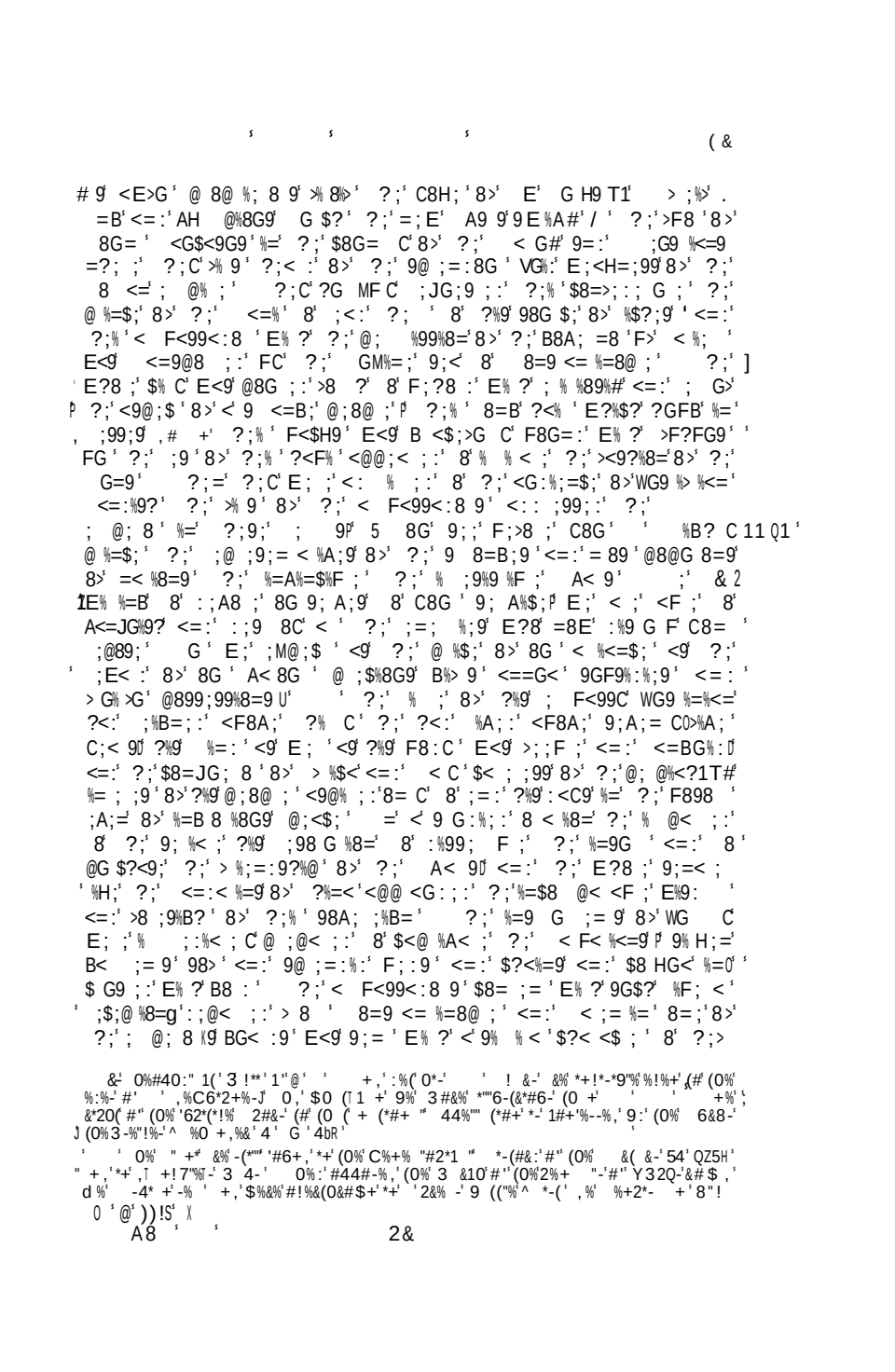
?;' A> '
> C?;8 ;' ?;'
% H9
<@@ 8<$?' ?;'
; @% ;

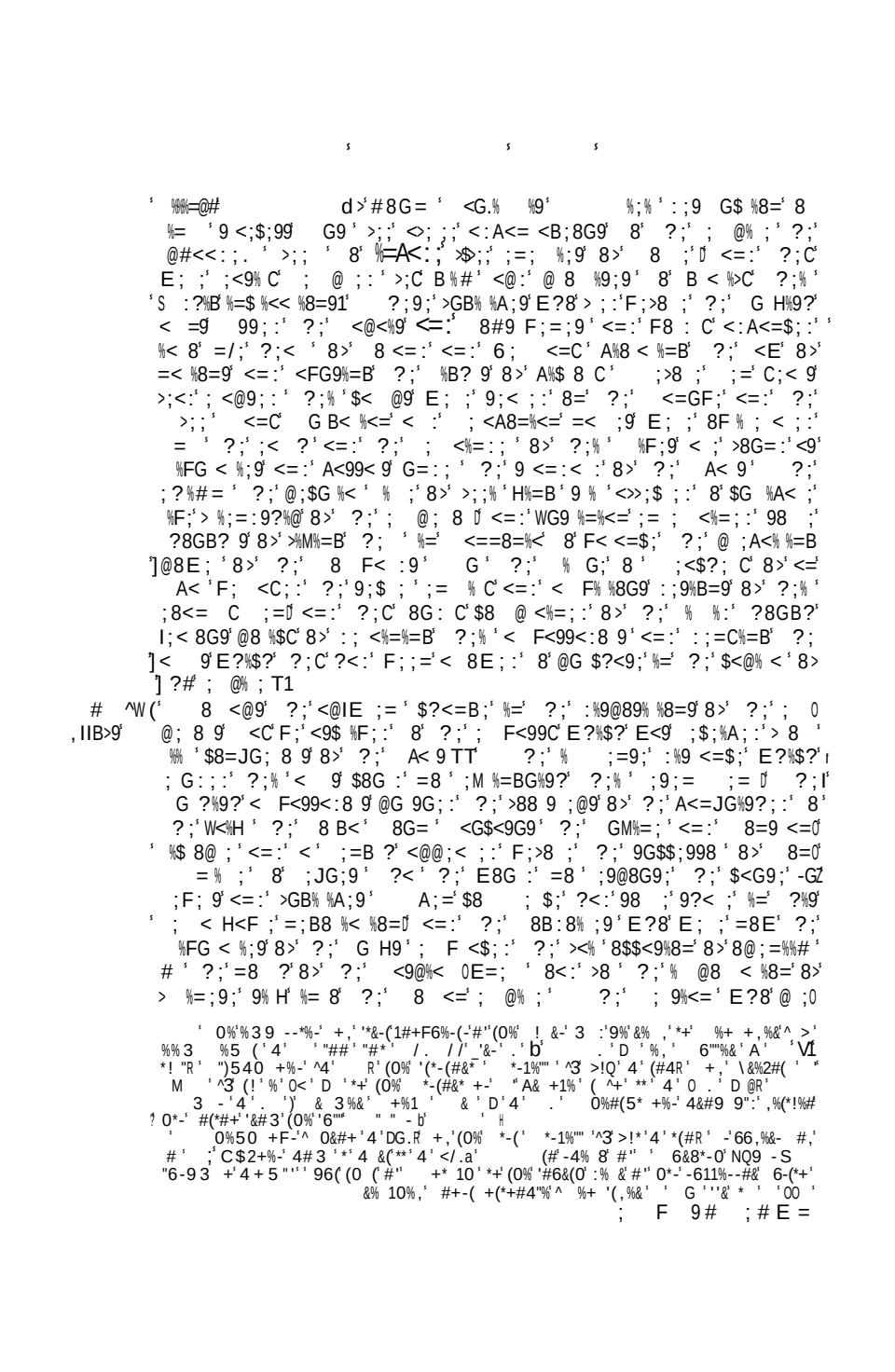
=' ?;' <@%:' $< ;;' 8>' $8=JG;9 ' ?;' G H9' < <$H;:' <=:' 9GFN
:G;:' ?;' =< %8=' 8>' ?;' B8 9' 8 ' < $?8=% ;9 T1' 8=' ?;' F<=H9' 8>'
?;' %A; ' % ' E?%$?' :;%A;:' ?;' ;@% ?;' 8>' F <$H' > 8 ' % 9' :< H'
< ;' 8 ' B 88 C' >8 ;9 9 TT' ?;' H?<=' 8>' ?;' B8 9' E<9' 9 <%='
E% ?' ? ;;?G=:;:' ?8G9<=:' 8>' ?%9' 9GFI;$ 9' <=:' ?;% ' F8:%;9'
E;;' 9$< ;;:' 8A;' ?;' 9@<$;' 8>' >8G ' :<C9K' I8G =;C' P ?;% '
9G A%A%=B' $8G= C ;=' <$H=8E ;:B;:' ?;' 9 ;=B ?' <=:' %@; $C' 8>'
?;' G H9' D <=:' <' 9 < ' @8 %8=' <F8G ' E;= C' ?8G9<=:' E< %8 9'
@ ;>; ;:' ;M% ;' 8' 9; A% G:;' ?;C' >8 8E;:' ?;' E; 0H=8E='
8<:' 8>' ?;' 8 B<' $?; %9?;:' ?;' ; 8 ' 8>' ?;' =< %8=9' E?8' $8=N
>8G=:;:' ?; ' E% ?' ?;' ' <=:' 9@ ;<:' ?;' ; 8 ' 8>' ?< '
>< 9;' ?8GB?' >< 8G9' <@@; < %8=' E?%$?' ?<:' =8 ' ?8E;A; ' 9<A;:

A#&' (0%' #&*2*+' +,' &%!#"6(*#+-' #"' (0%' '*&-(' 6&8*-0' %34*&%' (0%' 0*+%-%',%(*"-'
&%' 9#&&#$%,' '&#3' 7%' C6*2+%-' ^ *-(' ,%-' 6+-' (#3' *' ' **' 4' I<@ . DR' +,'
*-,%"#6' ^ 644"%3%+(' 8' " ' *9"*#(056%' &*%+(' ,T %&9%"#(' 4' D .R' 0%'
C&%%8' #&' #3 +' 0*+(-' &%' 2 (0%&%,' *+' %+ +,%&' ^4' G .R' +,' 0%#40:" 1('
*3#1 ((^"':**' '@' R

=' 0%#40:" 1(6-' ^!**' @' .R' - :-' (0 (' (0%' & 1%' 1 ""%,' 2#&' ^#"' $%&%'
'(%&$' &,-' 1 ""%,' & +, 06++" z' ' ' < ub' +,' (0 5' &%' 1"% &":' %+ +K
,%&I-' P' T &10#+*(%-' f ' 0%' $#&,' ' 3% +(' I'&*!%&f' +,' ? 5-' 6-%,' 9:' (0%' 6+-'
'#&' (0%' 7+*%4%&' ^ #&, +%-' 4' D@' %,' #3 3-R' 0%' 0*+%-%' -#6&1%-' 3%+(*#+'
6*2#6&-' +% &' (0%' 6" ' ^-%%' +%>(' +#(%R' $0#' -%% 3' (#' 1#&&%-4#+,' (#' (0% 2#&' #"'
0%#40:" 1(6-' +% &' (0%' *" b

0%' &' & #*"' #&' 6" ' 11#&,*+2' (#' (0% 2%#2& 40:' #"' 7%' C6*2+%-' ^(#3' *'
4 &(' **' 4')!**" +,' </DR' *-' -3 "(' (0#620' 2& (%' 6" -(&% 3' #"' (0% ,%-%&(' (0 (' "-'
+(#' (0% &10#+' %"+2 ' E1' %% "" ')# (+%:' > 8 ' %(%&-96&2' (#' %8*+' ^!#"' **'
4 ' D.RJ :%(' 0*-' #$+' ,%-1&*4(*#+' #"' (0% =% (' ,#$+' $0*10' 0%' - *"%,' *4(#' (0% 9:'
&%4&%-%+(-' (0% + 5 %' +,' ((&*96(%-' #"' (0% ' 'S +' < R' _ 0%' *,%+(*'*1 (*#+'
#"' (0*-' *'!%&' *-' F6*(%' 6+1%&(' *+ b



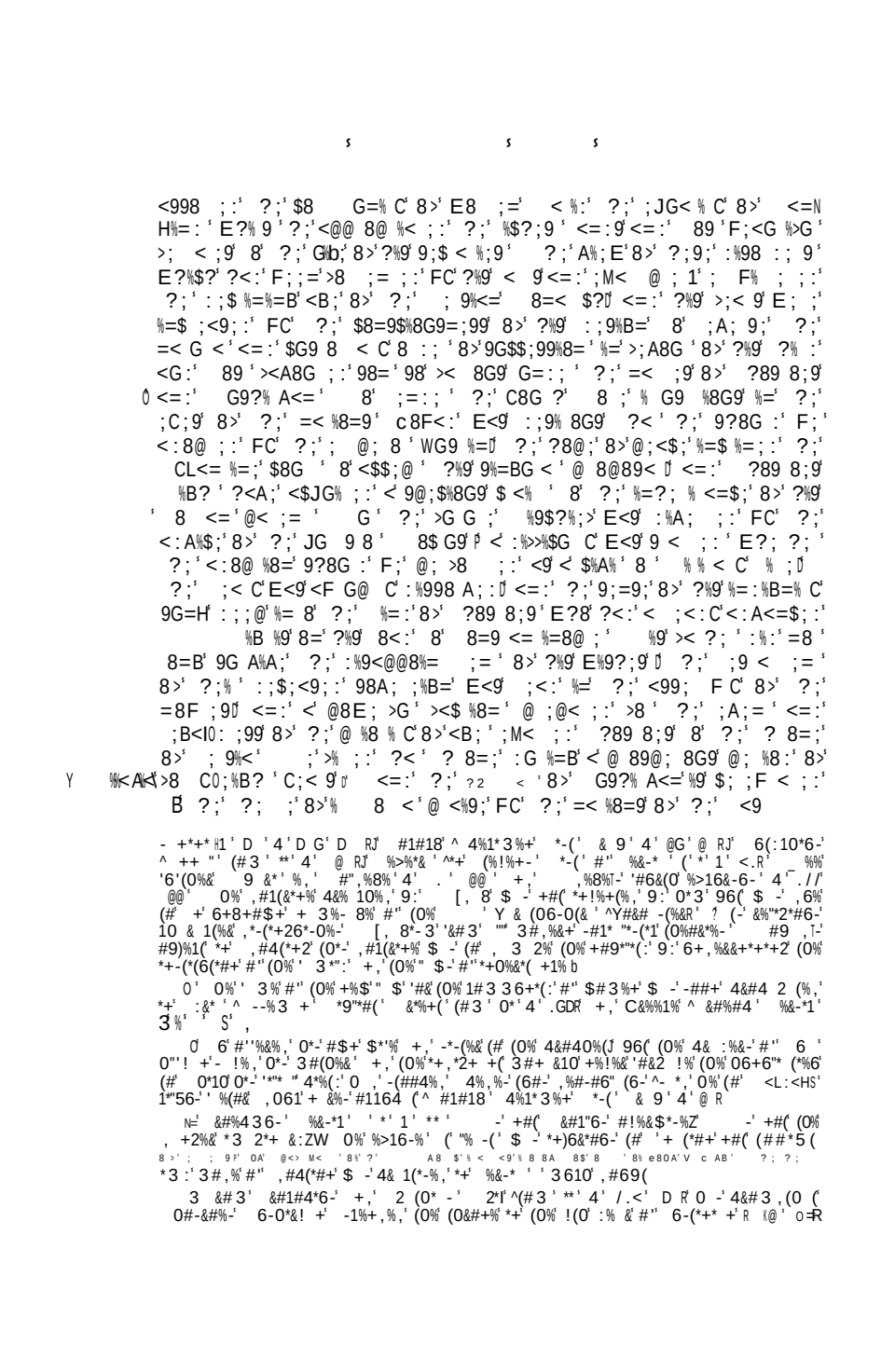


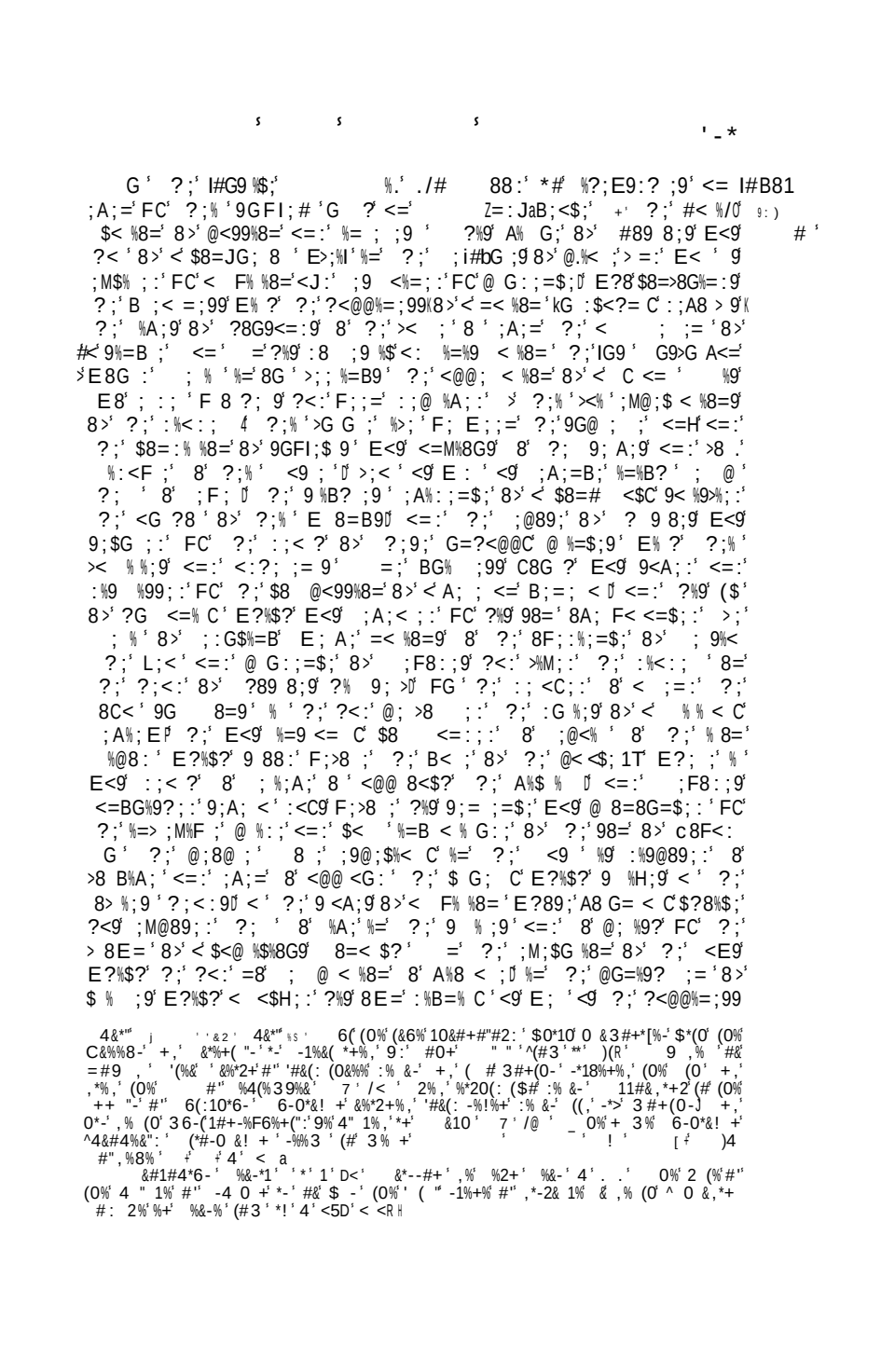
>; ;:ʻ ?;ʻ =<A%B< %8=ʻ 8>ʻ ;C 8=ʻ?<:ʻ 9 8@@;:ʻ ?;ʻ $< <A<=9ʻ 8>ʻ #8$?< <ʻ<=:ʻ < < $<=:0ʻ ?;%ʻ9% Hʻ% <9ʻ ; 0 ; @ .8G9 CʻFG = 4ʻ ʻ G H%9?ʻ <%@?<99<:;9ʻ:%;:ʻ %=ʻ ; #'E% ?ʻ <ʻ9G9@%$%8=ʻ8>ʻ @8%98=0ʻ <=:ʻ ?;ʻB ;<ʻH?<=ʻ@; % ;:ʻ?%9ʻ><% ?(ʻA<99<ʻ <=%<$?ʻ ?;ʻ@ %=$;ʻ8>ʻ ?;ʻ 8B:8% ;9ʻ 8ʻ@ 8@89;ʻ<ʻ ?;ʻ C9<= %=;ʻ 8G ʻ O ʻ ;< Cʻ8>ʻ< <=$;ʻ<B<%=9ʻ ?;%ʻ$@ 8=ʻ;F; %$9ʻ ?;%ʻ9@%;=#ʻ q:%:ʻ <@@< ;ʻ <=:ʻ %$?ʻ @ ;9;=9ʻ ?;ʻ > G%ʻ8>ʻ %;=<ʻ GMG Cʻ :%9 %=BG%9?;:ʻ <=%<$?ʻ<=:ʻ?%9ʻ$8 ;<BG;9ʻ>8 ʻ ?;ʻ G:;ʻ9<A<B;9ʻ >8>ʻ?;ʻ=8 ?0ʻ?;%ʻ; ; 9ʻ%=ʻ?;ʻ $C ?%<=ʻ$?< <$;ʻ<=:ʻ<=BG<B;ʻ <==8G=$;:ʻ<ʻ@;8@ ;ʻE?8ʻ?<:ʻ< <%=;:ʻ ?;ʻ G:% ;=9ʻ8>ʻ9$%;=$;ʻ ?;Cʻ;=G ;< ;:ʻ ?;ʻ$8=JG;9 9ʻ ?;Cʻ8>>; ;:ʻ ?;ʻ>%;=:9?%9ʻ<=:ʻ % % < Cʻ<%:ʻ8>ʻ ?;ʻ G H90ʻ <=:ʻ ?;%ʻ9%=$; %Cʻ E<9ʻ< ;9 ;:ʻ FCʻ :% ;>Gʻ % @ ;$< %8=9ʻR%>ʻ ?;Cʻ E; ;ʻ BG% Cʻ8>ʻ>%:9;?88:$ <B<%=9ʻ ?;%ʻ8E=ʻ?;<:ʻ<=:ʻ ?;ʻ ?;<:ʻ8>ʻ %9<FGʻ ?;%ʻ$?<9 ;ʻ ?;ʻ 6 ;;Hʻ@ %=$;ʻ;= ; <%=;:ʻE%ʻ?ʻ?89@% <F ;ʻ ;B< :ʻ ?;ʻ <=%F<99<0ʻ :8 9ʻ8>ʻ<ʻ ; 8 ;ʻ<=:ʻ@8E; >Gʻ 8=< $?0ʻ ?;ʻ9%B?ʻ8>ʻ9% H1E8 9ʻ <=:ʻ 88 9ʻ:%9<@@8%= ;:ʻ ?;ʻ?8@;9ʻ@>ʻ ?;ʻ 8B:8%>;90ʻ ?;ʻ; @; 8ʻ ;=8G=$;:ʻ8ʻ9;; ;:ʻ 8ʻ ;=8G=$;ʻ ?;ʻ>GB% %A;ʻ A< 9ʻFGʻ?;ʻ <$$;@ ;:ʻ ?;ʻ< %<=$;ʻ8>ʻ ?;ʻ G H90ʻ <=:ʻ ?;ʻ < %>%$< %8=ʻ8>ʻ ?;ʻ ;< Cʻ E<9ʻ $< %;:ʻFCʻ<ʻ 8 <=ʻ %=%9 ;ʻ 8ʻ ?;ʻ>88ʻ8>ʻ 8G=ʻ < % = : ; ʻ ?;ʻ 9G$$;998 9ʻ >ʻWG9 %=%<=ʻ ?;ʻ>%;=:9?%@ʻ8>ʻ ?;ʻ E8ʻ =< %8=9ʻE<9ʻ $G %A< ;:ʻ FCʻ> ;JG;=ʻ <=:ʻ $8 :%<ʻ%= ; N $8G 9;0ʻ ?:ʻ 89ʻ><A8G ;:ʻA<99<9ʻE; ;ʻ @; % ;:ʻ 8ʻ% % < ;ʻ ?;ʻ;M< @ ;ʻ8>ʻ ?;ʻB ;<ʻH?<=ʻ<=:ʻ8=;ʻ?G=: ;:ʻ<=:ʻ9%M G H9ʻ E?8ʻ8=ʻA< %8G9ʻ8$$<9%8=9ʻ?<:ʻA%9% ;:ʻ 8=9 <= %=8@ ;ʻ:;@< ;:ʻ <ʻ ?;ʻ 9< ;ʻ % ;ʻ>8ʻ ?;%ʻ=< %A;ʻ$8G= Cʻ ?;ʻ :G < %8=ʻ. :ʻ ;=B ?ʻ8>ʻ ?;ʻI8G =;Cʻ>8 ʻ ?;ʻ CL<= %=;ʻ$8G ʻ 8ʻ 8G=ʻ <%ʻ <;ʻ=8ʻ9@;$%>%;:0ʻ % ʻ %B?ʻ ?<A;ʻF;;=ʻ :%>>%$G ʻ 8ʻ <Hʻ<8<:ʻ ? 8GB?ʻ ?;ʻ =< ;;99ʻ ;:;9= 8G= <%=9ʻ %A; 9ʻ <=:ʻ 8 <99;9ʻ8>ʻ < <Cʻ0ʻFG ʻ<ʻ$G %8G9ʻ<$$8G=ʻ?<9ʻF;;=ʻ@ ;9; A;:ʻ 8>ʻ ?;ʻ ;$;@ %8=ʻ8>ʻ ?;ʻ 8 <=ʻ< F<99<:8 9ʻ<ʻ ?;ʻ 8C<ʻ $<ʻ @ʻ > ;ʻ ?;Cʻ?<:ʻF;;=ʻ@G %>%;:ʻE% ?ʻ>% ;ʻ<=:ʻ%=$;=9;ʻ<$$8 :%=B0ʻ 8ʻ <ʻ % ;ʻ9 % ʻ@ <$ %9;:ʻ G=:;ʻ ?;ʻ98=9ʻ8>ʻ `%=B%9ʻ ?;Cʻ E; ;'%= 8N :G$;:ʻ 8ʻ ?;ʻ@ ;9;=$;ʻ8>ʻ %9<FG 1#ʻ =ʻ<ʻA< ;Cʻ8>ʻ ?;ʻ 68 :;=

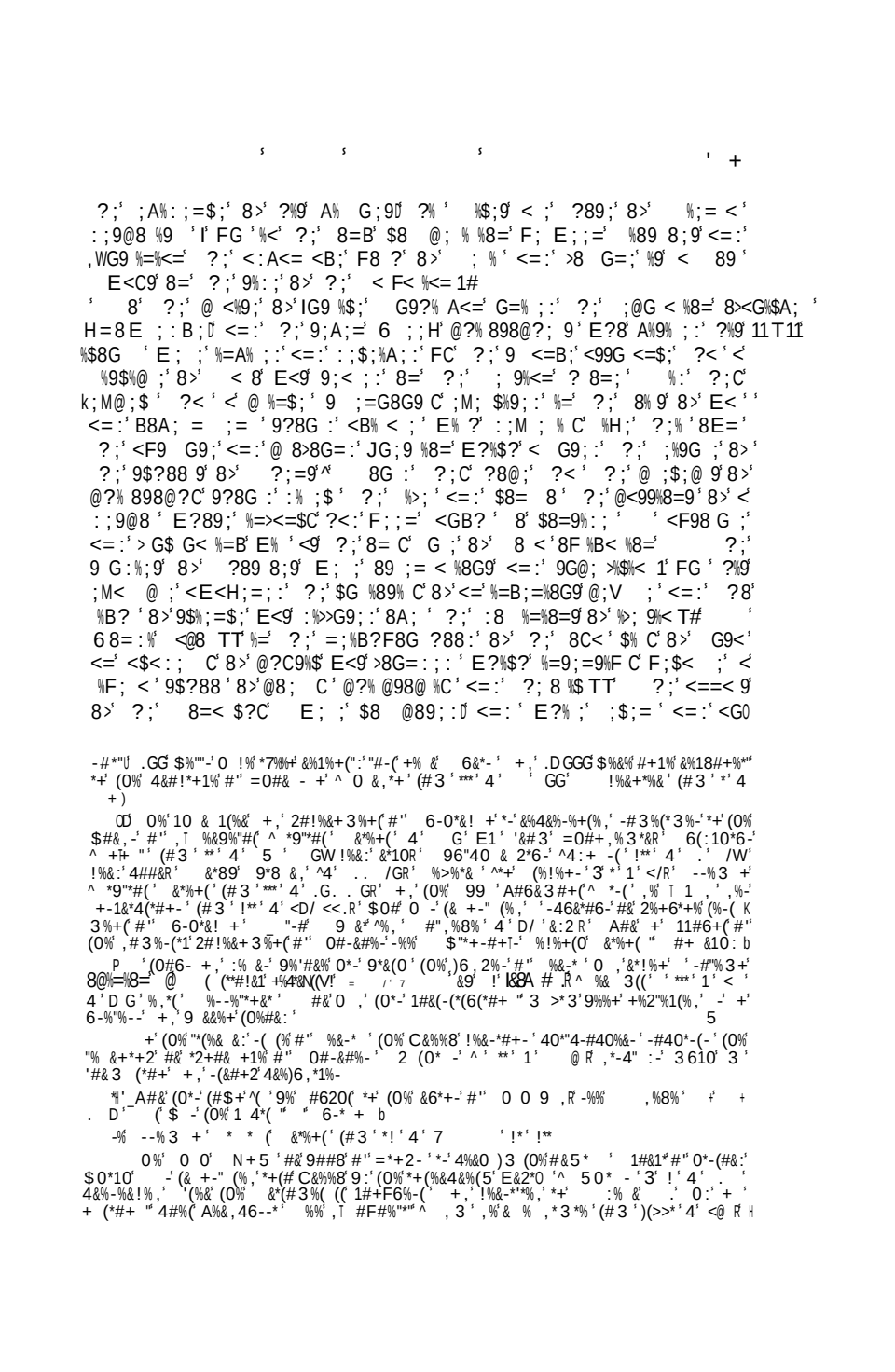
0%ʻ 6--* +-ʻ 0 !%ʻ '#6+,ʻ 10 & 1(%&-ʻ&6,%ʻ0*%&#2":40*1-ʻ#+ʻ(0% &("5ʻ +,ʻ %+*-%*ʻ #+ʻ 3%, "-ʻ (#39-ʻ*,#"-ʻ &#18-ʻ #9%"*-8-ʻ E ʻ^ (& 0"%+9%&2ʻ *-(ʻ #'" *9%&* ʻ4ʻ<D.ʻ<. ʻ.G ʻ.D R ʻ 7& ʻ :,%ʻ^,% %"*2*#+% N%&63ʻ %&- &4* ʻ4ʻ /D ʻ E1Rʻ0 -ʻ2*!%+ʻ($# "40 9%(-ʻ#'' "**9%(ʻ +,ʻ#'' (0% :2#6&-ʻ ʻ0 !% "#+20 &9#6&-ʻ ʻ-6-4*1*#+ʻ(0 (ʻ LLʻ(0% 1:(0* +ʻ +,ʻ&#(-%ʻ4 H0 4-ʻ (& ʻ#''(0%ʻ+(+ʻ -1*%+1%ʻ $ -ʻ ,%&*!%,ʻ '&#3ʻ(0%ʻC&%5-ʻ#'' 1(&* + ʻ _ +ʻ &%1%+("::ʻ,*-1#!%&%,ʻ 6&8*-0ʻ*+-1&*4(*#+-ʻ-%% 44%+,*>ʻ> a ; ^ %+ +,%&Rʻ*-ʻ4&#9 9":ʻ "(*ʻ 6(*($ -ʻ+#((0% -% (#'' (0% 10]%'' 80 +ʻ 3%+(*#+%,ʻ*+ʻ(0% 0*+%-% +#(% a 5ʻ_7*- 96'' ^(0%&%*-ʻ3#&% 6(0#&*(:ʻ'#&ʻ(0%ʻ'#&3ʻ ! Mʻ 36-(9% ,*-(*+26*-0%,ʻ 4h O%Oʻ 5 0Iʻ 68 +ʻ^ & !2Rʻ 0# *-ʻ1%"&(+ %,ʻ*+ʻ(0% 9*+% %-#6&1%-

%=$<@<F ;' 8>' G ; %=B' 8 ' >8 B%A%=B' 9;?8;:' <=:' ?< ' ?;' 9?< '
9@;;:% C' ;; ' ?;'@G=%9? ;=' E?%$F' ?;' :;9; A;9' ?% ;' ?;'
98 %$% 9' C' > %;=:9?%@' E% ?' >< ; %=B' <=:' ?; 8A ' E8 :9' F;' %9'
#G=H' 8'<'$8=>;:;<;'8>' C'>GB% %A;' < $?8=% ;9' >' '$8=:;9$;=:'
8' < $?' <B<%=9' ?89;'$8= ; @ %F ;'9<A;9' ?;C' % ' ; F ;'<
X ?;' 98G=:' 8>'8G ' E?%@9 ?;C' E% ' F;' < @ ;:' %H;'<' =;9' 8>'
<= 9' G=:; ' ?;'>;; ' 8>' C' %==G ; <F ;' $<A< C' ' ' < ' =8 '
%B=8 <= ' 8>' ?;' 8<:' E?%$?' ?;C'?<A;' >8 8E;:' 8' %=A<:;'C8G '
; @% ;' =8 '$<=' F;' :;$;%A;:' FC' ?;'A<%='@ ; ;?$;' ?< ' 8G= '
<G$<9G9' %9' ?;'% @ ;B=<F ;' F< %; ' 8>' ?;' 8 <=9' ' H=8E'
?;'$8G 9;'8>' ?;' =%;9 ; ' ?;' <=GF;'<=:' ?;' ;F G9'D' ?;'
89 ' E< %H;' =< %8=9' ?<A;'C%; :;:' 8' ?;'< 9'8>' ?;' G H9'D'
<=:' > 8 ' ?;' %9%=B' 8' ?;'9; %=B'9G=' ?;';< ?' %9' C'%=?; % 0'
<=$;U' ', 8 E% ?9 <=:%=B' ?%9' =%;=<$;' <' 9;=9;'8>' G G<' <:N
A<= <B;' 988=' ;=;E;:' ?;'< %<=$;'8>' ?;' G H9' <=:' 8 <=9D
FG ' ?;'@ %:;'8>' ?;'#;<' H?<='9G A%A;:' ?%9' ;9;= ;=D %:'
E?;=' ?;' <==8G=$;:' <=' % @8 <= ' $8=JG;9' 8' ?%9' >%;=:' ?;'
; @; 8 ' <G %$;' ?;' 9 C ;:' ?% 9; >' ?;' <9 ;' 8>' ?;' 9;A;='
<$;9' <=:' ?;' 8 :' 8>' ?;'9;A;='$ % < ;9' 8>' ?;'E8 :
%9@G ;9' ?<A;' 8> ;=' < %9;=' F; E;;=' ?;' 98A; ;%B=9' 8>' 9%<'9<;.'
>8 ' ?;' % ;' 8>'H%=B' 8>' ?;' E8 :D E?% ;' ?;'$8= ;9 '?<9' @ 8A;:'9E%'<
?<' % ' $8G :' =8 ' F; 8=B' 8' ;% ?; ' 8>' ?;' $8 @; % 8 9 ' ?;'
H%=B:8 ' 8>' ?;' G H9' E<9' F8G=:;:' FC' ?;' MG9' 8 ' 6%?8=D <=:'
, " ' E<9' 9;@< ;:' FC' ?<' B ;<' %A; '> 8 ' ?;' %A<' 8=< $?C'
8>'; ' 8 ' ; 9%<' E?%$?' %=' <' 9 < ; '$8 @<99'$8= <%=;:'@; ?<@9'
<' < B; ' ;<9G ;'8>'@8E; ' <=:' @8@G < %8=' ?;' ; 9%<=9' E?8'
< ; =< ; C' %=A<:;:' <=:' ;@G 9;:' ?;' G H9' <=:' ?;' 8 <=9'
E;;'9 % ' G ;:' FC' ?;' ?8G9;'8>' <99<=' E?%$?' <9$;=:;:' ?;'
? 8=;' ? ;;' ?G=: ;:' C;< 9' F;>8 ;' ?;' <$$;99%8=' 8>' WG9 %=%<=
%9' $8= ; @8 < C' <F<:;9' 8 ' c8F<:' ?<:' F;;=' 9G$$;99>G' %='
E<' <B<%=9' ?;' ; @; 8 ' =<9 <9%G9D ?G ' ?;' ;%B=' 8>' ?<'
@ %=$;' E<9' :%9 <$;:' FC' $%A%' <=:' ; %B%8G9' 8GF ;9' '@ %98=;'
%=' ?;' ?<=:9' 8>' ?%9' 9GFI;$ 9D <=' ;M% ;' < 8=B' ?;' ;=; %;9' 8>'
; 9%<D ?;' ;$8A; ;:' ?%9' %F; C' FC' @ 89 % G %=B' ?;' ?8=8G '8>'
?%9' E%>;' <=:' ;B<%=;:' ?%9' H%=B:8 ' E% ?' ?;' :<=B; 8G9' <=:'
; $;=< C' <%:'8>' ?;' < F< %<=9' E?8' ?<:'9 <%=' ?%9' >< ?; ' % '
=8F ;9' E; ;'9G9@%$%8G9' ?< ' c8F<:' =;A; ' >8 B<A;' ?;' <G ?8 9'
8>' ?%9' ;M@G 9%8=' 8 ' ;A;=' ?89;'8>' ?%9' ;9 8 < %8=' ?;' @;8@ ;'
E<9' :; G:;:' <=:' %=> < ;:' FC' ?;' ><=< %$%9 ' 8>' <L:<H ## E?8

Xi3' (0%' ,%(*"-'#"'(0%-% 6&8*-0' +,' #3 +'%39 --*%-' -#'%6&*#6I*+' (0%' 0*- '?
(%&:' " 063 +'3 ++%*-' &%',& $+' '&#3' (0%' >(& 1(-'#"' %+ +,%&' ^4' *# *&#'
/ /.' .'^(&-' ')4' D' .<'*+' A' 'M' *! bO' *+' $0*10' $%' #'(%+' &%2&%('
(0%'$' +(' #''#&,%&' +,'1#++%>*#+
' +-%#',T %&0%" (' ^ *9"*#(' &*%+('4' ' j "U :,%M,%' %"*2*($*%' %(' %&







F;= %;ſ ?%9 8#ſ %B? ſ <>%8 :ſ <9r %ſ ;99V/<.ſ F8 ?ſ 8ſ ?;ſ @ %=$;ſ <=:ſ @;8@ ;ſ ?;ſ :< H=;99ſ 8>ſ ?;ſ >% 9ſ <B;9ſ E<9ſ ; F; N %9?;:ſ FCſ ?;ſ B%<= 9ſ ?;ſ : <B8=^ſ <<:ſ ?;ſ >%%FG 8G9ſ ?; 8;9ſ 8>ſ %;= <ſ 8 <=$;ſ A; Cſ ; %;:ſ 8ſ $8=>%:;= ſ 9 <=B;ſ 0E<9 ;= %$?;:ſ FCſ ?;ſ F8G= C <=:ſ>< ; ;:ſ FCſ ?;ſ $8=A; 9< % %ſ 8>ſ ?;ſ 8=< $?ſ ?;ſ =8F Cſ ;E< :;:ſ <ſ 6 ;Hſ @?C9%$%<= T1ſ FCſ ?;ſ :; %A; <=$;ſ 8>ſ ? ;;ſ ?8G9<=:ſ $<@ %A;9ſ <=:ſ ?;ſ 98@?%9 9ſ E?8ſ $8= ;=:;:ſ>8ſ ?%9ſ><A8G ſE; ;ſ ;M<9@; <;:ſ0FCſ ?;ſ E;< ?ſ <=:ſ %=98 ;=$;ſ 8>ſ W <=%=9ſ ?;% ſ 8 ;ſ 9G$$;99>G ſ %A< ſ G9?% A<=ſ F;?;A;:ſ8ſ<ſ ;<9ſ ;9@;$;:ſ ?;ſ ; %B%8=ſ8>ſ ?;ſ <B%ſ <=:ſ 98 ;ſ <$;9ſ 8>ſ@; 9;$G %8=ſ <Cſ F;ſ :%9$8A; ;:ſ #=ſ ?%9ſ ;%B= T1ſ ;ſ ?;ſ< 8E;:ſ ?% 9;>ſ>% ;;Cſ 8ſ $8 @< ;ſ ?;ſ ;=; 9ſ 8>ſ ?;ſ A< %8G9ſ 9;$ 9ſ <=:ſ ?;ſ ?;: 8B%$<ſ :%9@G ;9ſ %=ſ E?%$?ſ ?;ſ > ;N JG;= Cſ @ ;9%:;:ſ :% %=%9?;:ſ ?;ſ <G ?8 % Cſ 8>ſ ?;ſ @ %;9ſ <=:ſ ;= %B? ;=;:ſ ?;ſ %=:9ſ 8>ſ ?;ſ @;8@ ;ſ F%9ſ $8 <=:ſ ?; %=89ſ $; ;F< ;:ſ E % ;^ſ 8>ſ 6 ;:$;ſ <=:ſ =:%<ſ E; ;ſ <=9 < ;:ſ %= 8ſ ?;ſ ; 9%<=ſ <=BG%#;ſPſ <9 88 ?ſ <=:ſ ;B<=ſ %:%8 ſ ;$8 N ;=$;:ſ FCſ <?8 ;ſ 8ſ ?;ſ G9;ſ 8>ſ@< <:%9;ſ ?8GB?0%ſ%9ſ F <=:;:ſ E% ?ſ ?;ſ ;@% ?;9ſ 8>ſ 9<A<B;ſ <=:ſ G= G9%$<ſ FCſ ?;ſ %B=8 <=$;ſ <=:ſ@ ;9G @ %8=ſ8>ſ B< ?%<9Tſ ; ſ ?;ſ 6 ;;Hſ ?%9 8 %<=ſ %B? ſ ;<P =<F Cſ E@=:;ſ ?< ſ%ſ9?8G :ſF;ſ>8G=:ſ@899%F ;ſ 8ſ ;M;$G ;ſ <=ſ ;= % ;ſ A; 9%8=ſ8>ſ <8ſ <=:ſ %9 8 ;ſ %=ſ< >8 ;%B=ſ:%< ;$ ſ E?%$?ſ?<:ſ=8ſF;;=ſ>< ;:ſ 8ſ ;M@ ;99ſ ?;9@% %ſ8>ſ>;;:8 ſ<=:ſ ?;ſ9GF ;%;9ſ8>ſ@?% 898@?%$ſ:%9JG%9% %8=ſ =:ſ%>ſ ?;ſ ;<98=ſ8>ſ ?;ſ <BC % ;ſ %B? ſF;ſ ;JG< Cſ:< Hſ 8ſ ;JG< Cſ %= ; %B%F ;ſ %=

+,ſ *&ſ *""* 3ſ #+%-ſe *-(ſ#'ſ ,*&ſ 9 0ſ4ſ Rſ _ 0%ſ 0 0+ 3ſ$ -ſ 9%26+ſ 6 4 4 4½ +,ſ1#34"%(%,ſ A*&, 6-#ſ'$+#,*%,ſ !6ſ"#-#Rſ 0%ſ3 (%&*ſ"4&#9 :ſ 2#%-ſ9 18ſ(#ſ'"#-(ſ 0#, *+ 3ſ#&ſ9##8ſ#"ſ #&,-ſ,& $+ſ64ſ9:ſ(0%ſ#&,%&-ſ#"ſ 6-0*&!+ſ +,ſ$#&8%,ſ64ſ*+(#ſ'6""%&ſ'#&3ſ6+,%&ſ [,%2%&,ſ*ſ^ << <@Rſ %%ſ ,",%8%ſ 9 &*ſ4ſ>!b

'+ſ(0%ſ'*ſ(0ſ1%+(6&:ſ(0%+ 3%#"ſ %-(#3ſ#&ſ #-(3ſ +ſ0%&#ſ$0#%F6 ""%,ſ(0%ſ -(&%+2(0ſ#"ſ($%"!%ſM ſ DGſ,%40 +(-ſ$ -ſ 3*"*ſ&ſ(#ſ(0%ſ &3%+*+-ſ^ #-%-ſ 0 &%+%+-*-ſ *-(ſ &3%+ſ3ſ 1ſ@ſ4ſ %,*(ſ 0*-(#+Rſ +ſ(0%ſ9%2*++*+2ſ#"ſ (0%ſ-%!%+(0ſ(0%ſ %&-*+ſ&#3 +1%ſ#"ſ #-(3ſ +,ſ -'%+,*ſ&ſ$ -ſ 44" 6,%,ſ(%11ſ^ "%7-ſ=#& +ſ1ſ>>>*ſ4ſ<</R' %(ſ(0*-ſ%>4#-*(*#+ſ "6,*1&63ſ+#! %0*-(#&*-%*-ſ+#(2*!%+ſ9:ſ & 11*^ %'6(ſ('"1#& +ſ4ſ/..R

&#1#4ſm#(0ſ'*!ſ1ſ" =#9 ,0 ,ſ'' !#6&*(%C&%%8ſ40:-*1* +ſ(%40%+ſ #"ſ ,%-- '^ %&-*%ſ" **ſ1ſD Rſ 0%ſ4& 1(*1%ſ$ -ſ +1*%+(Jſ +,ſ %&#,#(6-ſ&, (%-ſ (0%ſ ,!%+(6&%-ſ#"ſ %3#1%,1-ſ#"ſ &#(#+ſ^ſ***ſ1ſ D/ <@R

2*ſ(#3ſ**ſ4ſ Dgſ +ſ#+%ſ#"(0%ſ(&% (*%-ſ +ſ0#+#6& 9"%ſ &(*1"%ſ$ -ſ *+-%&(%,ſ'#&ſ(0% (#"%& (*#+ſ +,ſ96&*ſ"#"(0% (0#"*1-ſ^ %+ +,%&ſ*+ſ >4%&4(ſ %2 "ſ4ſ .Dſ_'&ſ J !D<*+ſA ſ m*!ſbRſ 6-0*[,ſ -#+ſ#"ſ *&(**&#60ſ $ -ſ ſ 0&*-(*+ſ ſ&%9%"ſ + W ſ3 &(:&Z _7T %&9%"#"ſ4ſ R

hſ +ſ(0% %&-* +'" +26 2%ſ +,ſ*(-ſ(0)&#%,* "%1(-ſ1#+-6"(,T +F6%(*"^4ſ &&*0&5&R +,ſ # E-ſ^4ſ /< /Rſ :+0.ſ+&*ſ: #(&)*ſN*)63#&, 6ſ*-(9ſ10 &1(%&ſ $0*10ſ 2(-ſ^3ſ3ſ4ſ ſ -1&*9%-ſ(#ſ+ſ*,*#3ſ&%+#$3%,ſ*+ſ(0% -(ſ'#&ſ4# (* "-#'(K +%--

;A;>C 8=BG; ? ; : < < %$ < =: A; F< < BG ;= < %8= F> ?; : %9$%@ ; 8> 8$ < ; @ <@@; < 8 F ; %=: %998 8 C %=B ; : E% ? ?; B <$; <=: @ ; >; $ %8= 8> ?% @ %$ 9 C ; = ?; 9; < : % 8 > G=% ; 9< H=8E ; : B ; G9?% A<= E<@ %=>8 ; : ?< ?; 8 < =: @8 % %$< ><F ; 8> % @<C <= <=$%; = <$?H=<= E ; ; _0 ;9; A; : % ? I; < 8G ;A; ;=$; < 8=B ?; ;<9G ; 8> ?; H%=B9 8> #=: %< ?; @?C9%$%<= ; 8L; E<9 9; $; C :%9@< $?; : 8 ?;$///%/; ?<=H 8> ?; 6<=B;9 E% ? %=9 G$ %8=@ 8$G ; < ??C @ %$;] ?; $8 G=%$< %8= 8> ?%@ A< G<F ; E8 H %@ : ; M ; % C 8FN <%=; : < <=9$ %@ ?%@ ;< =; : % %B; =$; <$$8 @ %9?; : ?; <=9N < %8= ? <=: ?; ><F ; 8> % @<C T E ; ; <: <=: <: % ; : %= ?; <99; F C 8> G9?% A<= <=: ?%@ =8F ; 9 ? = : %<= 8 %B%=< <=: ? ; ; 9%<= $8@C ?<A; 8=B 9%=$; : %9<@@; < ; : FG ? ?%@ ;=; <F ; 8=G ; = ? ?<@ F; ; = 9<A; : FC ?; $G %89% C 8> ?; <F%<= $< %@?9 ; A%A; : %= ?; 8 : ; = ; 9%$?; G H%9? ?; C I<$?; ; F ; E ? <=: ?; 6 ; ; H %: %8 9 <= : <=9>G9; : ? 8GB? 9G$$; 9N 9%A; A; 9%8=@ %= 8 ?; 8 : ; <=BG<B; @ 8> G 8@; = ?; % @ ;9; = >8 ?; @; $G %< $?< <$; ?; <==; @ <=: ; %B%8= 8> ?; %= : 889 < ; $8 @ ; ; C 8F % ; < ; : <=: ?; %= %=9%$; % 8> ?; ><F ; @ 8> % @<C @ >< %=>; %8 8 ?; $8=$%9; ; ; N B<=$; 8> ?9; : G@ <=: ?; =< %A; B <$; @ 8> < 8= <%=; %> ; ; = 8 < <=: @8 % %$< 9; = ; =$; @ < ; % G9 < ; : %= < 9; %; @ 8> <@8 8BG; 9 FG ? ?; $8 @89% % = @ %= %$< ; ? ?; =< < %A; @ 80

D 2 (0* - -4%1*'*%- (0% C#&2* - 0-%, #+ &3%+*, %- + , *&+ % 5 % + 6, #(^A 9&*1*6- *9'*#(C& %1 (#3 >**' 4 D. D R , #%- +#(3%+(*#+ (0*- &K 9 &*1 !%&-*#+ #'' &*-(#(%

 '' (0%-% ' 9'%- ' 0 !% -%%+ (0&%% 1#4*%- *+ (0&%% , *''%&%+(" +26 2%-0 * ' + & +-" (%, 9 : *3%#+ %(0 % g '&#3 (0% & 9*1 +, 469'*-0%, F C (&18 (%&'*+ *+ @ *+ *D3 # D + !%&-*#+ '&#3 (0% C&%5 4*%+(* + , #&6*+ *+-%&(%, 9 : 5&% #6--*+ ((0% %+, #'' 0*- %, *(*#+ #'' 10: 3%& e4 / . @ DG %, *(#3 +R < + ; = '&#(0 (0% 6&8*-0 , %, *1 (%, *+ /. (# 6"(+ #'* 3 + J #+(%- %(A 9"%- + , %%+ % , % *, 4 * %(, % #8 3 + 4 & C "" +, % (&, #++ % &*- @@ < !#"- *+ *D 3 # & 0 &(#+ e *-(#&:' #' +2'*-0 #%(&: !#'' *' 4 D < R (8%- ' " &2%& -1#4% _ 0%-% ' 9"%- '#& 3 %, ' (a(% 1, "%1 (*#+ %+(*(%, (0% +10 (+(& 0%: &%(& +-" (%, ''&# 3 +-8&*(*+(# C%& 3 + F& 0%#, #&% %+'%: $0# *+ (0% *&-(!#"6 3 % #'' 0*- %3 #6- $#&& e +(-10 (+(& / R 2*!%- ' '6" 11#6+(#'' (0% #&*2*+ , , *''6-*#+ #'' (0% 9"%- 0%&% *- +# &% -#+ (# , #69((0 ((0%: $%&% (& +-" (%, ' *+(# %0"%! ' *+ 6-0*&! +T- &%*2+ ^14 %+'%: + *' 4 - '##(+#(%R , , '&#3 (0*- (& +-" (*#+ $ -3 , %*+ g(0 1%+(6&: (0% %>(+(& 9*1 !%&-*#+ ^%, 9 : *"!%-(&% , % 1: P "* '%(7*3+ '#6 9"%- , % *, 4 * f J +2"*-0 (& +-" (*#+ 9 : =+ (1096 > R 0%+ (0*- & 9*1 !%&-*#+ $ -(&+-" (%, *+(# %&-* + ^ D(0 1%4(6&: R 9 : & "" 0 +, ' '&%% &%K 1%+-*#+ #'' (0*- !%&-*#+ 9 : 6- *+ *#[-, #+%* +(# "'*- 0 9 : -($*18 /. +(0% C&%%8 (& +-" (*#+#'' %(0 (0% (*("%*-+#(= "* 0 +, + 3+ ' '96(P (%40 +*(%- + , 10+%" (%-I (0 -9%%+ %, *(%, '1&*(*1 "": 9 : ' #+(#+# e^ R ' :&* 1 !%&-*#+ 0 -9%%+ %, *(%, 9 : ' &*5 (^ .R + , (& +-" (%, *+(# +2"*-0 9 : & =%*(0 A "1#+%& ^'' /R ' '6&(0%& 5%0 %: ' I+B =&6 3 9 19%& C%-10 , %& 9 : [*((4 / (3 :9% , , %, (0 (*, 4 * $ - '40*#-#40%& $0# 44% &-*+ -#3% #'' (0%' 9"%-J +, ' (0%*& 6(0#&-0*4 $ - -1&*9%, ' 3' (0%' & 9*1 (& +-" (#& b

%Mˢ <=:ˢ ?;ˢ @ ;$;@ ˢ :#%8=9ᵍ .%:ˢ >;< #=ˢ ; ˢ ?;ˢ <$? <=ˢ <Cᵉ <99G ;ˢ ?;ˢ ; % ˢ ;ˢ 8.ˢ <ᵉ @ ;<9%=Bᵉ >%$ %8=ˢ #?%$? <:8 =9ᵍ ?;ˢ =<H;:=;99ᵍ 8>ˢ G ?ˢ <=:ˢ < ;A%< ;9ˢ @; ?<@9ˢ 8ˢ < 8C<ˢ ;<ˢ ˢ ?;ˢ ?< 9?=;99ᵍ 8>ˢ %=9 G$ %8=ˢ % ?ˢ <ᵉ 9% % <ˢ :;9%B=ˢ 8ˢ<: 8=%9?ˢ H%=B9ᵍ ?<ˢ ?;Cᵉ<;ˢ 9 8=Bᵉ8= Cᵉ%=ˢ ?;ˢ 9 ;=B ?ˢ 8>ˢ ?;I ˢ 9GFI;$ 9ˢ ?;ˢ 9< ;ˢ =:%<=9ᵍ %=A;= ;:ˢ ?;ˢ B< ;ˢ 8>ˢ $?;99ˢ E?%$?ˢ E<9ᵍ %H;E%9;ˢ %= 8:G$;:ˢ %=8ᵍ ; 9%<ᵉ G=:; ˢ ?;ˢ ;%B=ˢ 8>ˢ G9?% A<= T#

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/', ?;ˢ 98=ˢ 8>ˢ c8F<:ˢ >8G=:ˢ ?%9ᵍ H%=B:8 ˢ %=A8 A;:ˢ %=ˢ <ᵉ0A <ˢ E% ?ˢ ?;ˢ 9G$$;998ˢ 8>ˢ 8=9 <= %=;0ˢ <=:ˢ ?;ˢ <=M%; Cᵉ 8>ˢ ?%9ᵍ :8 ;9 %$ 9% G< %8=ˢ %=$ %=;:ˢ ?% ˢ 8ᵍ B <=ˢ ?;ˢ 9G9@;=9%8=ˢ 8>ˢ< 9ˢ E?%$?ˢ WG9 %=%<=ˢ E<9ᵍ % @< %;=ˢ 8ˢ@G $?<9;ˢ ?89 8;9ᵍ 9<Eˢ ?;ˢ 8 <=ˢ < F<99<:8 9ᵍ<ˢ ?%9ᵍ >;;ˢ ;ˢ<$$;@ ;:ˢ ;A;=ˢ ?8G9<=:ˢ @8G=:9ᵍ 8>ˢ B8 :ˢ <9ᵍ I%;ˢ @ %$;ˢ 8>ˢ <=ˢ .ˢ 8ˢ %=:;>%=% ;ˢ @;<$;0ˢ Tˢ 98 ;ˢ G G<ˢ ;M$?<=B;9ᵍ E; ;ˢ ;BG < ;:0ˢ ?;ˢ ; 9%<=ˢ <99G ;:ˢ ?;ˢ BG< :ˢ 8>ˢ ?;ˢ B< ;9ᵍ8>ˢ <G$<9G9ᵍ<=:ˢ ?;ˢ:; 8 % %8=ˢ 8>ˢ < <ᵉ E<9ᵍ 9G9@;=:;:ˢ 8=ˢ $8=:% %8=ˢ ?< ˢ % ˢ 9?8G :ˢ =;A; ˢ F;ˢ <:;ˢ ?;ˢ ;9%:;=$;ˢ 8>ˢ ?;ˢ B;=; <ˢ8>ˢ ?;ˢ <9 ˢ ?%9ᵍ %= ; A<ˢ 8>ˢ ;@89;ˢ ?<:ˢ F;;=ˢ 98 %$% ;:ˢ <=:ˢ E<9ᵍ:% %B;= Cᵉ% @ 8A;:ˢ FCᵉ ?;ˢ< F% %8=ˢ 8>ˢ ?;ˢ ; @; 8 0ˢ ?%9ᵍ > %$<=ˢ $8=JG;9 9ᵍ E; ;ˢ ?;ˢ >% 9ˢ > G% 9ᵍ 8>ˢ ?;ˢ ; 9%<=ˢ ;< C0ˢ <=:ˢ ?;ˢ<A< %$;ˢ 8>ˢ ?89 8;9ᵍ E<9ᵍ 988 ?;:ˢ FCᵉ <ᵉ < B;ˢ @8 %8=ˢ 8>ˢ ?;ˢ 9@8% 9ᵍ 8>ˢ < ?<B;ˢ E?%$?ˢ ?%9ᵍ< F<99<:8 9ᵍ ;JG% ;:ˢ %=ˢ <ᵉ 8=;ˢ 8>ˢ @ ;<9I%= Cᵉ<=:ˢ G=:;ˢ ?;ˢ $8 8G ˢ 8>ˢ > %;=:N 9?%@ TTˢ G ˢ ?;ˢ 8@?%;9ᵍ 8>ˢ ; %9< %G9ᵍ:%9 G F;:ˢ ?;ˢ 9 G F;9ᵍ 8>ˢ ?;ˢ B ;<ˢ H%=B0ˢ <=:ˢ ?;ˢ I;<:ˢ E% ?ˢ <9 8=%9? ;=ˢ ;=AC ˢ <=:ˢ >;<ˢ ?<ˢ %$% Cˢ <Cˢ<=:ˢ 8 ;ˢ % 9;>ˢ ?<:ˢ F;;=ˢ ;:G$;:ˢ %=ˢ ? ;;ˢ <@%:ˢ $< @<%B=9ᵍ 8ᵍ ?;ˢ 8F;:%;=$;ˢ 8>ˢ WG9 %=%<=ˢ =0ˢ @ <$ %9;:ˢ %=ˢ ?;ˢ<ˢ 8>ˢA%8 <%=Bˢ ;<%;9ˢ ?;ˢ 9;$; Cˢ ;M$% ;:ˢ ?%9ᵍ F8 :ˢ <=:ˢ 9GF ;ˢ A<99<ˢ 8=:<ˢ ?<ˢ @ %=$;ˢ 8>ˢ ?;ˢ < <$;=9ˢ E?8ˢ ;9%:;:ˢ <ˢ % <TK ?<:ˢ =8ˢ F;;=ˢ %=$ G:;:ˢ %=ˢ ?;ˢ B;=;<ˢ @;<$;ˢ <=:ˢ 9 % ˢ E<B;:ˢ <=ˢ 8F9$G ;ˢ E<ˢ <B<%=9ˢ ?%9ᵍ %A<ˢ ; ?<9

Y < %>

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0%ˢ%+,"%-ˢ4% 1%ˢ^ &#1#4*6-ˢ %*5*1ˢ3 3ˢ1ˢ-*Rˢ $ -ˢ1#+1"6,%,ˢ#&ᵉ& (*'*%,ˢ*+ˢ (0% $(0ᵍ:% &ᵉ +,ˢ *,ˢ1#+-6"-0*4ˢ#'' 6-(*+* +ˢR ˢ /<<ˢ9%($%%+ˢ +6 &:ˢ*ˢ +,ˢ 4&*'ᵉ ˢ 2*ˢ(#3ˢ**ˢ4ˢ //GR' &1%"0+6 ˢ*+ˢ0*-ˢ 0&#+*1"%ˢ6-%-ˢ(0%ᵉ-(:"%ˢ#'' %,%-ˢ +,ˢ %&-* +-5

S &#1#4*6-ˢ %&-*1ˢ ˢ*ˢ1ˢD

"3#+, &ˢ8*+2ˢ#'' *& ˢ$ -ˢ,%4#-%,ˢ9:=#9 ,ˢ +,ˢ&%-(#&%,ˢ9:ˢ 6-0*&! 6ˢ _ #ᵉ 3[J 96(*(*-ˢ,#69('6" ˢ *-ˢ3#(0%&ˢ'&#3ˢ0%&ᵉ 9% 6(:ˢ$ -ˢ-((3 3%,ˢ 1 ˢ# ˢ+ˢ 44%"" (*#+ˢ$0*10ᵍ9%1 3%0%&%,*(&:ˢ +,ˢ$ -ˢ%>(%+,%,ˢ'#&ᵉˢ 3#&%ᵉ+#9"%ˢ1 6-%^"*9%& "*(:ˢ*+ˢ' 3*+%Rˢ(#ˢ(0%ᵉ & 9ˢ4&*+1%-ˢ#*'' :&* ˢ^ #1918ˢ)5*Rˢ 3%+ˢ *-(ˢ5& 9ˢ ˢ 4ˢ@GRˢ _%(*!%%+ˢ(0%ᵍ(%&&0#&*5ˢ#"ᵉ *& ˢ +,ˢ(0%ᵍCO -- + %-ˢ $ -ˢ(0%ᵍ&%2*#+ˢ#''(0%ᵍ 0 T 9*(%-ˢ$0#ᵉ &%ˢ3%+(*#+%,ˢ9:ˢ# 6ˢ (:"*(%-ˢ^'(ˢ $R ˢ $*(0*+ˢ(0%ᵍ-40%&%ᵉ#''ˢ#3+ˢ 6 1% ˢ A#&ᵉ(0%ᵍ1 &%%&ᵉ#'' "3#+, &^ 6+,0*&Rˢ 8*+2ˢ#''ˢ*& ˢ 7ˢ#0ˢ)H14ˢ, %8%ˢ 9 &*ˢ4ˢ%1 & !3

?;ʻ$?%;>ʻ8>ʻ ?;ʻ %F;ʻ 8>ʻ6<99<=ʻ^%=Vʻ$8=>;:; < ;ʻ8>ʻ ?;ʻ; @%>;ʻ ?;ʻ9GFI;$ʻ8>ʻ ?;%ʻ:%9@G ;ʻE<9ʻ<@ʻ;M ;=9%A;ʻ9?;#0E< ʻ%=ʻ ?;ʻ :;9; ʻ 80 ?;ʻ98G ?ʻ8>ʻ < C <ʻ @ʻ% ; 8 %<ʻ %FG ;ʻ>8ʻ ?;ʻ %$;=$;ʻ 8>ʻ @<9 G ;ʻ<@@;< ;:ʻ 8ʻ < ;9ʻ ?;ʻ %B? 9ʻ 8>ʻ 8=:< ʻ ?%;ʻ ?;ʻ 6<99<=% ;ʻ<@@;< ;:ʻ 8ʻ ?;ʻ < %=ʻ =< ;ʻ8>ʻ9 <Oʻ<ʻ @<A;:ʻ 8<:ʻ<9ʻ<=ʻ G=JG;9 %8=<F ;ʻ ;A%:;=$;ʻ8>ʻ ?;ʻ98A; ;%B= Cʻ <=:ʻ <F8G 9ʻ 8>ʻ ?;ʻ 8 <=9 11ʻ ?;ʻ E8ʻ 8=< $?9ʻ 9G@@8 ;:ʻ ?;ʻ$<G9;ʻ 8>ʻ ?;%ʻ ;9@;$ %A;ʻ A<99< 9ʻIʻ <=:ʻ ?;ʻ ; <=ʻ <F1ʻ E% ?8G ʻ;M@;$ %=Bʻ ?;ʻ;A;=ʻ8>ʻ<ʻ9 8Eʻ<=:ʻ :8GF >Gʻ< F% < %8=ʻ ;= %$?;:ʻ ?%9ʻ> C%=Bʻ $< @ʻ E% ?ʻ ?;ʻ9@8%ʻ <=:ʻ$<@ %A;9ʻ8>ʻ C %<ʻ =9 ;<:ʻ8>ʻ ;@; %=Bʻ ?;ʻ< 9ʻ WG9 %=%<=ʻ< ; @ ;:ʻ 8ʻ.;: ;ʻ ?;ʻ>%:; % Cʻ8>ʻ 8=:<ʻ E?% ;ʻ ?;ʻ$< ;:ʻ>8 ʻ ?;ʻ;M ; % %;9ʻ 8>ʻ ?;ʻ;< ?ʻ ?;ʻ=< %8=9ʻ8>ʻ# ?%8@%ʻ <=:ʻ $C ?%<ʻ 8ʻ%=A<:;ʻ ?:ʻ :8 %=%8=9ʻ8>ʻ?%9ʻ %A< ʻ G ʻ ?;ʻ<%:ʻ8>ʻ9G$?ʻ< %;9ʻE<9ʻ :%9 9 ʻ <=:ʻ@ ;$< %8G9ʻ<=:ʻ ?;ʻ:%9$8A; Cʻ8>ʻ ?%9ʻ?89 % ;ʻ$8 ;9@8=:;=$;ʻ IG9 %>%;:ʻ ?;ʻ $8 @ <%= 9ʻ 8>ʻ ?;ʻ 68 ?9ʻ <=:ʻ ;=%<=9ʻ E?8ʻ % @ 8 ;:ʻ< 89ʻ<ʻ ?;ʻ9< ;ʻ % ;ʻ ?;ʻ@ 8 ;$ %8=ʻ8>ʻ ?89 8$9Oʻ ?;ʻ:;9$;=:<= 9ʻ8>ʻ 9<$;9ʻE?8ʻE ;ʻ 9 % ʻ=G ; 8G9ʻ %=ʻ ;N =%<ʻ ?<:ʻ F;;=ʻ@ 8A8H;:ʻ 8ʻ<99; ʻ ?;ʻ <9ʻ ; %$9ʻ 8>ʻ=< %8=<ʻ > ;;:8 ʻ <=:ʻ?; ;:% < Cʻ <=Hʻ <=:ʻ ?;ʻ< F<99<:8 9ʻ8>ʻ % %B;9ʻ ?<:ʻ9;$; Cʻ <A; 9;:ʻ ?;ʻ ; @% ;ʻ 8ʻ ;M@89;ʻ ?;ʻ%=9 <= ʻ <=:ʻ < 89ʻ %=;A% <F ;ʻ:< H;ʻ 8>ʻ ?;ʻ H%=B:8 ʻ 8>ʻ < Cʻ ?;% ʻ ;Oʻ @ ;9;= < %8=9ʻE; ;ʻG=%>8 ʻE;%B? Cʻ<=:ʻ;>>;$ G< ʻ 1# ;ʻ9 <=:ʻ F;>8 ;ʻ C8G ʻ ? 8=;ʻ ?;ʻ<:A8$< ;9ʻ8>ʻC8G ʻ%= ; ;9ʻ<9ʻE; ʻ <9ʻ 8>ʻ8G ʻ8E=ʻ ?;ʻ< F% %8G9ʻ<=:ʻ><% ? ;99ʻ WG9 %=%<=ʻ<9@% ;9ʻ 8ʻ F;ʻ ?;ʻ98 ;ʻ <9 ;ʻ 8>ʻ ?;ʻ E8 :ʻ %=$;ʻ ?;ʻ ;=: ;99ʻ @;<$;ʻ E?%$?ʻ F; <C;:ʻ ?;ʻ$8 8=ʻ> ;;:8 ʻ8>ʻ <=H%=:ʻ ?< ʻ @ %=$;1ʻ C8G ʻ< Cʻ%=ʻE8 :9ʻC8G ʻ;=; Cʻ%=ʻ<$ %8=9ʻ?<9ʻ< %H;ʻ%=9 ;:ʻ>;%9 > %;=:9ʻ<=:ʻ >8B9ʻ<=:ʻ ?<9ʻ>% ;:ʻ ?;ʻ;< ?ʻE% ?ʻ F 88:ʻ<=:ʻ $8=N >G9%8=ʻ <9ʻ ?;ʻ=8ʻA%8 <;:ʻ ?;ʻ@ %A% ;B;9ʻ 8>ʻ ;=%<ʻ ?;ʻ %=:;@;=:;=$;ʻ 8>ʻ 8$?89ʻ<=:ʻ ?;ʻE% :ʻ %F; Cʻ 8>ʻ ?;ʻ L<=%<=ʻ 8G= <%=9ʻ^ <9ʻ?;ʻ=8ʻG9G @;:ʻE% ?ʻ;JG<ʻ<A%:% Cʻ ?;ʻ$% Cʻ8>ʻ 89@?8 G9ʻ8=ʻ ?;ʻ>8L;=ʻ <;8 %9ʻ<=:ʻ ?;ʻA<;ʻ8>ʻ@< 0 ;;9ʻ8=ʻ ?;ʻ9?8 ;9ʻ8>ʻ?;ʻ :ʻ ;<ʻ^ ?;ʻ 88 9ʻ ?;ʻs< :<Hʻ ?;ʻ68 ? ʻ ?<A;ʻF;;=ʻ9G$$;99%A; Cʻ8@@ ;99;:ʻ<=:ʻ ;<$?ʻ =< %8=ʻ?<9ʻ $< Cʻ ; <%=;:ʻ ?;ʻ9@;$ < 8ʻ8>ʻ ?;%ʻ =;%B?FI8G I9ʻ G%=1ʻ F <$;ʻ ʻ Hʻ%=Bƶ ?;ʻ><A8G <Fʻ; 8 ;= Dʻ ?;ʻ <9ʻ%9ʻ ;>ʻE% ?8G ʻ:;>;=$;ʻ E?% ;ʻ ?;ʻ< %;9ʻ 8>ʻ WG9 %=%<=ʻ <=:ʻ ?%9ʻ ;=8E=;:ʻ B;=; <ʻ<;ʻ :;<%=;:ʻ%=ʻ ?;ʻ:%9 <=ʻ ;B%8=9ʻ8>ʻ ?;ʻ ;9 >ʻC8G;?;9% <;ʻ <=:ʻ:;?%Cʻ ;%9< %G9ʻ<=:ʻ?%9ʻA%; 8%8G9ʻ 88@9ʻE% ʻ988=ʻ ; %

&#1#4*6-ʻ %&-*1ʻ3ʻ ʻ1ʻ*ʻ %ʻ &%ʻ \ & (((8>ʻ(0%#&* *ʻ3 ,ʻ 9)%1('#"(0*-ʻ ʻ 4 !5ʻ #"(%+ʻ^ʻ%)-"')#+&+%:ʻ'(#*+ʻ $ 3(*-ʻ ʻ'(d"#0" ʻ (*+ʻ+#(%ʻ3ʻ7^N,%'-ʻ 4ʻ (+4ʻ &*%+(5ʻ %--%"*#2'(3,'(' +!* %ʻ 3ʻ *"%+(

<=:' ?;%' =;E' <9 ;' ;=>8 $;:' E% ?8G' 8F9; A%=B' ?;' ; g' 8>' $<@% G < %8=' :G$< ;:' %=' ?;' ; %B%8=' 8>' ?;' <B%' ?;' ;M; $%9;:' E% ?8G' ; 8 9;' ?;' G$ < %A;' <:;' 8>' 9<$ % ;B;Ð <=:' <> ;' 9 %@@%=B' 8>' % g' B8 :' <=:' B; g' < @%;$;' 8>' ?;' G;' $ 899' ?;' B;=; 8G9 C' ;9 8 ;:' ?;' =<H;:' ;%$ 8' ?;' :;A8 %8=' 8>' ?;' ? %9 %<=g' 8>' @< ;<' 8' 8 ;' ?<=' >8G ;;='C;< g' ?<:' ;<I@9;:' 9%=$;' = %8$?' E<g' G%=;:' FC' <=' ;< ?JG<H;Ð FG' ?;' JG;;=' 8>' ?;' <9 ' ?;' =;E' ?;8@8 %9' ?<:' F;;=' <%9;:' > 8 ' ?;' B 8G=:' FC' ?;' %F; < % C' 8>' WG9 %=%<=<=:' ?;' %=N $;<9%=B' B ;< =;99g' 8>' ?;' FG% :%=Bg' <=:' ?;' @;8@ ;' < ;<:C' ; <9;:' ?;' ; 8 C' 8>' ?%g' ;$;=' :%9<9 ;'] =' 8=;' 9%:;' ?;' $% C' E<g' :;>;=:;:' FC' ?;' 8G= <%=' 8=' ?;' 8 ?;' FC' ?;' %A;' 8= ;g'Ð FG' ?;' 89 ' <$$;99%F ;' @< ' E<g' $8 <=:;:' FC' <' 9G@; %8' ; %=;=$;Ð ?;' @ 8@;' ; ;:%;g' E; ;' ;I;$;:' > 8 ' ?;' :;9@%$<F ;' >;<' 8>' :%9$8A; %=B' % g' E;<H=;99g' 8' ?;' ;=; C'Ï <=:' 6; <=G9' ?;' ; @; 8 ¼g' =;@?;E' ;>G9;:' 8' G9' ?%g' ', @; 98=' <=:' :%B=% C' E% ?%=' ?;' E< g' 8>' <' F;9%;B;:' $% C' ?;' @;8@ ;' 8>' = %8$?' ?<:' %=?; % ;:' ?;' A<%=' <=:' 9< % %$<' B;=%G9' 8>' ?;% '<=$;9 8 g'Þ ?;C' E; ;' ; < ;:' FC' <' 9G:;=' ;%=>8 $; ;=' 8>' 9%M' ?8G9<=:' 98 :%; g'Ð ?;C' :%9:<%@;:' ?;' 8>>; g' 8>' <=' ;<9C' $<@% G < %8=Ð <=:' ?;% '%= ; @; < ;' $ < 8G g' %=9G ;:' > 8 ' ?;' < @< g' ?;' <I;9 C' 8>' ?;' B ;<' H%=B' =:; ' ?%g' ;C;' ?;' ; 9%<=' C %<:g' 8G= ;:' E% ?' 9$< %=B0 <:;; g' 8' ?;' <99<G Ð ?;' 8 <=' ; $;=< %;g' >;:' ? 8GB?' ?;' 8@@89% ;' B< ;' 8>' <@?=;'Ð <=:' ?;' B;=; 8Gg' ;9%9 <=$;' 8>' ?;' C8G ?' 8>' =>@$?' 9; A;:' 8= C' 8' <BB <A< ;' ?;' %9; %;g' 8>' ?;% '$8GJ C' g' ?89 8;9' < ;=:;:' FC' ?;' < F<99<:8 g' 8>' WG9 %=%<=' E<g' :;N 9$;=:%=B'> 8 ' ?;' 8G= <%=' ?;' <>;$;:' %=' < @ <%@ %A;' A8%$;' 8' :;@ 8 ;' ?;' 8F9 %=<$C' <=:' G%=' 8>' ?< ' G=?<@@C' @;8@ ;'Ð FG' ?;' 9 <GB? ;' 9 % ' <B;:' % ?' G ;;= %=B' > % CÐ <=:' ?;' $% C' < ' ?;' $8 <=:' 8>' <' < F< % =' E<g' :;%A; ;:' 8' ?;' >< ;9' ?;' $< ?;: <' 8>' = %8$?' E<g' %=:;:' @ ;9; A;:' FC' ?;' <A< %$;' =8 ' ?;' @%; C' 8>' ?;' $8=JG; 8 'Ð <' 8 ;' ?8=8G <F ;' ;M; @ %8=' E<g' B <= ;:' 8' ?;' $?G $?' 8>' ' WG %<=' <=:' ?;' JG< ;' 8>' ?;' 8E=' E?; ;' ?;' < F<99<:8 g' ;9%:;:Ð 98 ;' :%9 <=' 9 ;;g' E; ;' 9<A;:' FC' ?;' 9?%' %=B' 8>' ?;' E%=:Ð <=:' ?;' E< g' 9 % ' 9GF9%9 ;:' 8' @ 8 ;$ ' <=:' 988=' 8' F; <C' ?;% '=;E' %=?<F% <= 9' <=< %$%9 '?<:' :;>;$;:' ?;' 8 =< ;= g' 8>' <@?=;' FG' ?89 8;g' F ;< ?;:' <' @G ;' <% ' < %:9' ?;' B 8A;g' <=:' >8G= <%=g'Ð <=:' 98 ;' %:8 < ; g' %=' ?%g' <%=' %B?' 9<$ %>%$;' % ?' % @G=% C' 8' ?;' =C @?9g' 8>' ?< ' ;B<=' ;' ;< ' %B? ;;=' ;g' F; 8E' => 8$? #' ?;' %A;' 8= ;g' >< g' %=' 8' ?;' ;:% ; <=;<=' ?;' ?<GB? C' ; 9%<=' A%9% ;:' ?;' ; '8>'?%g' $8=JG;9 9Ð <=:'<> ;'F< ?%=B'< 8=;

%=' ?;' 9;> ' ?> ' 8T ; :' <' 98 ;%?=' 9<$ %>%$;' 8>' ?<=H9B%A%=B' 8' ?;' 9G=' 8 ' < ?; ' 8' ?;'< ;? 8 ' 8>' ?;' 9G=' E?8 ' ?;' <B%' <:8 ; : ' >' ?%9' <$ ' 8 >'9G@;I 9 % ?c ' 8>>; = : ; :' ?;' @ ;IG:%$;9' 8>' ?;' C %<=9 ' ?#C' E; ;' @ ;<9; :' FC' ?;' $8G ;8G9' <=:' ;A;=' ;<B; ' < ;= %8=' E% ?' E?%$?' ?;' <99%9 ; :' < ' ?;' B< ;9' 8>' ?;' $% $G9' D <=: ' <9' ?89 8;9' ?<:' ?;< :' ?< ' ?;' " ' >%$ %8=' E<9' ;9@8G9; :' FC' ?;' ; @; 8 ' ?%9' @; ; @ 8 C' $8 <=: ' 9;$G ; :' ?;' A%$ 8 C' 8>' ?;' ' $?< %8 ; ; ' 8 ' ?;' :%9$%@ %=;' 8>' ?%9' $< @' ?;' @;8@ ;' : ; %A; :' 8 ;' 98 %:' $8=98 < %8=D <=:' ?;C' %= ; $; : ; :' %=' A<%=' >8 ' ?;' %>;' 8>' <' 98 : %; ' E?8' ?<:' 88' ><% ?>G C' $8@%; :' ?;' <@%=;' 8>' ?;' IG9 0 G9?% A<=' ' ;=B ?' >< %BG; : ' ?8GB?' G=N 9< %< ; : ' E% ?' ?;' 9@8% ' 8>' C %<' ?;' 9 8E C' 8A; :' 8' ?;' G@? < ;9' >8 ; :' <' ; @8 < C' F %:B;' %=' ?;' =;%B?F8G ?88 :' 8>' < F< %99G9' <=:' : ;>%=; :' ?;' 9@<$;' 8>' ? ; ;' :<C9' >8 ' ?;' ;= % ;' @<99<B;' 8>' ?%9' =G ; 8G9' ?89 ' > ; ' ?%9' ; G =' ?;' >8G=: ; :' < ' ?;' :%9 <=$;' 8>' 8=;' :<C%9' I8G =;C' > 8 ' ?;' @< <$;' 8>' ;9%@?8=' <' =; E' $% C' E?%$?' @; @; G< ; :' ?;' I8%= ' =< ;9' 8>' ?#9 8;9' <=:' 8>' = %8$? ## ?;' C %<=' $<@ %A;9' ;$8B=%9; :' ?;' >8 ' <=:' 9% G< %8=' 8>' ?;% ' =< %A;' <F8: ;9' D F< ?9' <=:' <' 9 < ; C' $% $G9' E; ;' $8=9 G$; :' >8 ' F;% ' G9;' D <=:' <' $8 8=C' 8>' G9%$%<=9' <=:' $?< %8 ; ; 9' ;A%A; :' %=' 99C %<' ?;' @ ;<9G ;9' 8>' <' 6 ; ;H' $<@% < ' C' ?;' G=%>%$;=$;' 8>' ?;' 8C<' >8G=: ; ' <' %F; < ' < 8E<=$;' E<9' <99%#; :' 8' ?;9;' >8 G=< ;' ;M% ;9D' <=:' ?;C' ;=I8C; :' ?;' 9%=BG < ' @ %A% ;B;' 8>' F;9 8E%=B' > ; ; :8 ' 8=' ?;' 9 <A;9' E?8 ' ?;C' <$H=8E ; :B; :' <9' ?;% ' H%=9 ;=' < ;9 %=;' <=:' ?;' ?8 C' E;<' ?' 8>' W; G9< ; ' E; ;' ?;' =;M ' 8FI;$ 9' ?< ' < <$; :' ?;' < F% %8=' 8 ' < ?; ' ?;' <A< %$;' 8>' ?89 8;9' 8=9 <= %=8@ ;' <=:' ?;' @< <$;' 8>' ?;' <;9< 9' =8' 8=B; ' <@N @;< ; :' % @ ;B=<F ;' 8 ' ; 8 ;D <=:' ?%9' <9@% %=B' ><=$C' < ;<:C' $8A; ; :' 9%<' %=8 ' E% ?' ?;' 88@9 ' <=:' ?;' <$H' ;<' E% ?' ?;' =<A%;9I' 8>' ; 9%<

?;9;' ?8@;9' %B? ' ?<A;' F; ;=' ;< %9; : ' %>' ?;' $8=JG; 8 ' 8>'

9< MG \0 : < C' ?<:' =8 ' F; ;=' 9;<98=<F C' ;$< ; :' 8' ?;' : ;>; =$;' 8>' ?;' <9 ## ?% ;' ?89 8;9' @ 9 ; :' ?%9' < F% %8G9' : ;9%B=9' 8=' ?;' $8<9 ' 8>' ?;' GM%=; ' ; %9< %G9 ' <' ?;' ?;<:' 8>' <=' < C' E% ?8G

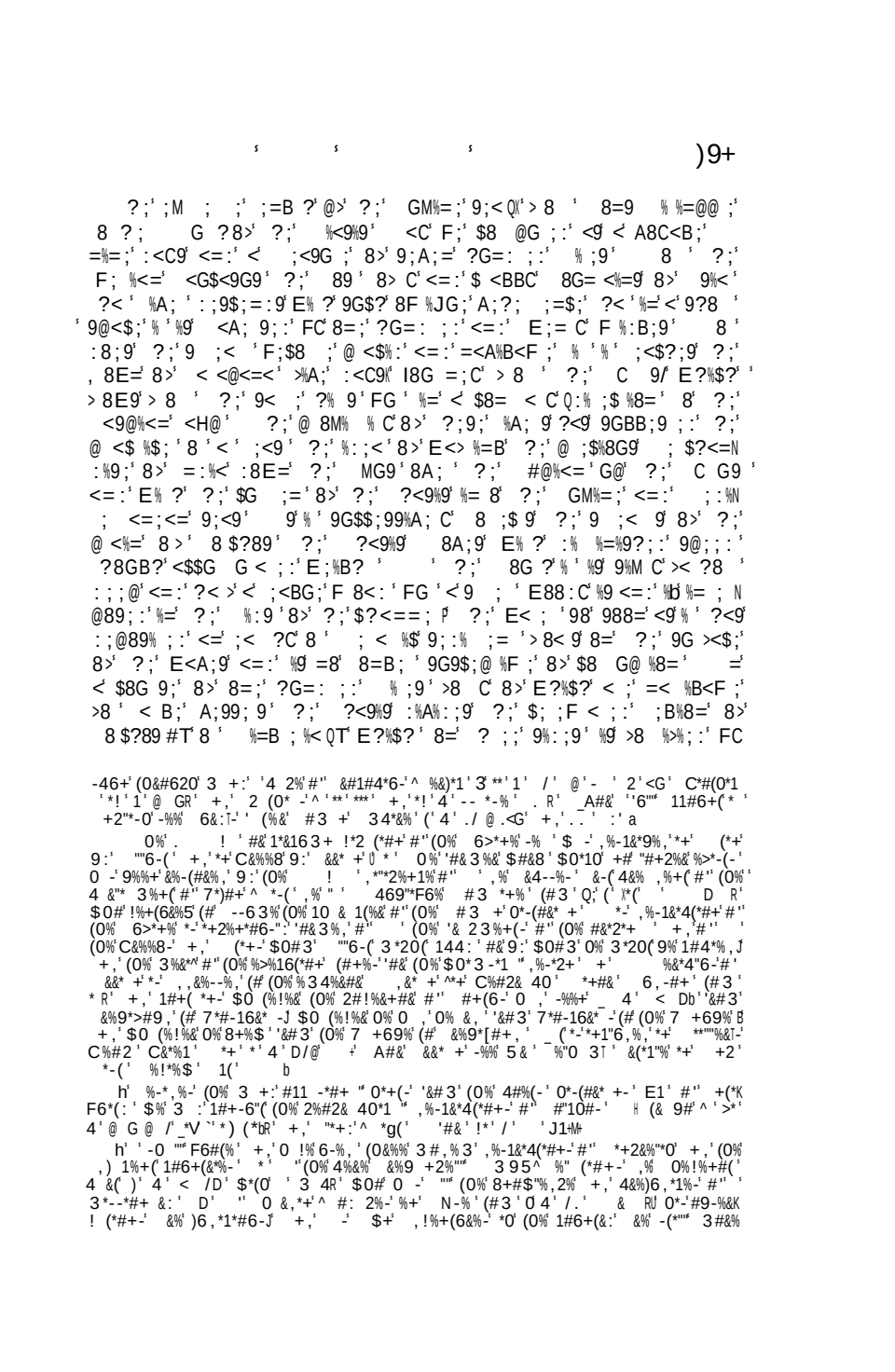
+_ 0%' '#6+, (*#+' #'' (0*-' 1*(:' *-' ,%-1&*9%,' 9:' 9 &*' 4' /' +,' 4' D<' ^%, ' ",%8%(' $0#' 1 ""-' *(6+"): ' (-' #''*1* '' + 3% $ -' -#3%(0*+2' "*)*%' %O' +(*#10 0#-& 6' -' 9",%8%'-622%-(-' A#&' $%' 3%%(' *('*+' (0%' &3%+* +'0*-(#&:'#'' %9 %#-'^ 6--' (& +-"' 9:' (8 +* +' 4' D R' *+' (0%' '#& 3' %10 6,[O (#8 0#-&#!' &#1#4*6-' 2*!%-' %!6 ' #!4,#!' J *+' 0%#40:" 1(6-' +,' #0+' #'' 40%-6-' (0% (#$+'*-1 %,' -*34":' +(*#10 b

5' +' (0%' 469"*1' 0*-(#&:' #'' &#1#4*6-' ^ %&-*1' 3' **' 1' & ' ' ' DG' D ' D.' D/' D ' -:' D R' +,' $*(0' -#3%' -"*20(' %>1%4(*#+-' $%' 3 :' &% -#+ 9":' -06(' #6&' % &-' %3*+-'((0%' 3 "%!#"%+(' $0*-4%&'#'' (0%' +%1,#(%-'^1' D' <' $*(0' (0%' #(%-' -'6-6 "' ' ## <=GG9$

@<C' 8 ' :%9$ @ =; ' ;= <% %@; :' F;C8=:' % ;' 8@F%G ;9')E% ? ' 9%M'
% ;9' 8>'WW%9%F%9' ;' ; :% < ; : ' FC' <'9H>%> '8@; % %<%D' 8' : <E'
?;' ; 9%<=9'> 8 ' ?;% ' % @ ;B=<F ;' $% <:; ' <=:' <@ 8A% B' ?%9'
<:A<= <B;' %=' ?;' >%; : ' ;% ?; ' 8' ; $;@ ' ?;% ' ; ;< ' 8 '
@; ?<@9' 8' ;= ; ' ?;' B< ;9' E% ?' ?;' > C%=B' < F< %<=9 ' ;'
<:A<=$; :' 8=;' :<C9'I8G =;C' 8=' ?;' ; % 8 %;9'8>' ; 9%<' ;:G;;:'
?;' >8 ;99 8>' %9<G <=;' <=:' 9;= ' ?;' B8A; =8 ' E% ?' ;%B?'
k?G=: ;:' $?89;=' ?8 9; ;=' 8' 9; A;' ?;' ; @; 8 '%=' ?%9' < %<='
E< 9' ;' :; <$?;:' ; ?<9'<=:'?%9' <F9'9G@@8 ;:'FC' E; A;#
?G=: ;:' 8 <=9' 8' @<99' ?;' %B %9' <=:' 8' <A<B;' ?;' ?< A;9 9'
8>' 99C %<' <' > G% >G' @ 8A%=$;' 8=B' ;M; @' > 8 ' ?;' $< < % %;9'
8>'E< ' G ' ?;' @ <=9' 8>' ;%9< %G9' E; ;' :%9$8=$; ;:' FC' ?;'
G= <$ <F ;' 9@% %' 8>' ; ?<9' E?8' =;% ?; ' ; G =;:' 8' ?;'
$< @' =8 ' 9;=' <=C' %= ; %B;=$;' 8>' ?%9' 8 %8=9' ?;' 8 <='
B;=; < 'E<9' >%M;:' %=' <=M%8G9' ;M@;$ < %8=' 8' ?;' 9< ;' 9@8 D' ?;'
% ;' 8>'<$ %8=' ; <@9; :D ?;' < :;= '9G=' 8>' ;98@8 < %<'%=> < ;:'
E% ?' >;A; 9' ?;' F 88:' 8>'?%9' G 8@;<=' 98 :%; 9'/ <=:' ?;' 9 < %8=N
< C' 88@9' <=:' 8>%$; 9' 8>' C %<'<>>;$;:' 8' ; F ;' >8 ' ?;' 9<>; C'
8>' ?;% ' :;>;=$; ;99' $% %;9' ; ' ?%9' :%A; 9%8=' ?<:' < ;<:C'
9G$$;;:;:'%=' >8 $%=B' ?89 8;9' 8' ; G =' E% ?' 899'<=:' @ ;%@%D'
< %8=D' <=:' %>' ?;' 9?% ' 8>' ; %9< %G9' ?<:' F;;=' 9;$8=:;:' FC'
:%9$%@ %=;' <=:' A< 8G ' ?%9' 9G$$;99' %B? ' ?<A;'9< %9>%;:' ?;' 9<=N
BG%=;' E%9?;9' 8>' ?;' @GF %$' E?8' ;JG% ;:' <' ?%9' ?<=:9' ?;'
$8=JG;9 ' 8>' ;9%@?8=' <=:' ?;' :; %A; <=$;' 8>' ?;' $<@ %A;9' 8>'
= %8$?' ' ?;' ;=:' 8>' ?;' $< @<%B=' ?;' E<9' ;$< ;:' 8' W? <'
8=9 <= %=8@ ;' FC' <=' G=B < ;>G' $8G ' FG ' ?;' :<=B; 9' 8>' ?;'
;=9G%=B' 9@ %=B' ;9 8 ;:' ?%(%<8=%:;=$;'<=:' $8 <=:D <=:' ?;'
?; 8' < 89' < 8=;' E<9' :;9@< $?;:' E% ?' ?;' 9@;;:' 8>'@89 D'
?8 9;9' 8' ;@; ' FC' ?%9' =< ;' <=:' @ ;9;=$; ' ?;' %=A<9%8=' 8>'
C %<' ;' >8G=:' ?;' 8 <=' B;=; < 9' < 8=B' E?8 ' E<9' <'
=;@?;E' 8>'WG9 %=%<=' % @ %98=;:' FC' ?;% ' >;< 9' %=' ?;' >8 %>%$<N
%8=9' 8>' %; <@8 %9 ' G ' %=9 ;<:' 8>' %9 ;=%=B' 8D' ?;% ' % %:'
8G=9; 9' ;9< %G9' $8 <=:;:' ?; ' 8' >8 8E' ?% ' 8' G 8@G9'
E?; ;' ?;' ?<:' ;98 A;:' 8' 8 ;$' ?%9' >8 $;9' <=:' 8' ;M;$G ;'
E?< ;A; '6 8:' 9?8G :'%=9@% ;'?% ' 8' <$?%;A;' <B<%=9' ?;' ;=; C
%9' >% ' < % G:;' 8=' ?;' F<=H9' 8>Q' ?;' G@? < ;9' ;9 <%=;:'
?89 8;9' > 8 ' <:A<=$%=B' 8E< :9' < ;9 %=;D <=:' ?;' ;$;%A;:'
E% ?' < ' <=:' :%B=% C' ?;' < F<99<:8 9' ' < ?; ' 9@%;9' 8>' ?;'
; 9%<=' 8=< $?' ?;' @ <%=' F; E;;=' %; <@8 %9'<=:' ?;' %A; '
E<9' 8A; ;:' E% ?' ?;'9JG<: 8=9' 8>'$<A< C'9%M' ?8G9<=:' ?G= ; 9'
< ' <=:' 8FG9 ' E?8' @G 9G;:' ?;% 'B< ;' E% ?8G ' ?;' <@@ ;?;=N
9%8=' 8>' <=' ;=; C' =' ?;' 8I 89% ;' F<=H' ?;' < F<99<:8 9'
:;9$ %;:' <' <E%5B :(& ; :0 :' ?8 9;' E?=' <@@;< ;:' 8' BG< :'
, %' ' <.

?;' @<99<B;' ?;' 8@F < ;9' ?;' ;='8>' ; %9< %G9'E<9'8>'
?;' $8< 9;9' @%;='?;' 9% @ ;' ;JG%@<B;' 8>'<'E< %8'E?8' :%9'
:<%;%;:' ?;' GMG C'8>' ?;' <9' 8G=:' ?%9' ;= ' ?;' =< %8=9'
E?;' % %< $?;#' G=:; ' ?%9'9 <=:<:' E; ;' < <=B;:' E% ?' 9H% >G'
$8=>G9%8=' ?;' ? <$%<=9' <=:' C %<=9' E; ;' @89 ;:' %=' ?;'
> 8= ' ?;' ; G %' <=:' 68 ?9' %=' ?;'$;= ;D ?;' @ 89@;$' E<9'
$ 89;:'FC' ?;' 88 9' <=:' <=:<9'<=:' ?;% ' 889;'< <C'9;; ;:'
8' G %@ C' ?;% '=G F; 9' ?;% ' :;99' E<9' %B? ' <=:' <$ %A;D
@38=;' 98 :%; ' $< %;:'<'E?%@'<=8 ?; ' <'9E8 :'<' ?% :' <'F8E' <'
>8G ?' @; ?<@9' <'F< ;0<M;D <=:' ?;' E?8 ;'@%$ G ;' ;M?%F% ;:'
?;' %= ;@%:% C'8>' ?;' 88@9' <=:' ?;' A%B% <=$;'8>' ?;'B;=; < '
?89 8;9'E<9' :; G:;:'FC' ?;'<:: ;99'<=:'<E;:'FC' ?;'B;=%G9'
8>' ?;' %;G ;=<=' 8>'WG9 %=%<=' 8=9$%8G9' 8>' ?;' ; % ' <=:'
%B=8 <='8>' ?;' >8%0$;' 8>' ?%9' <= <B8=%9 ';?;' : ;<:;:'<' :;$%9%A;'
F< ;' %='<' :%9 <='$8G= C'>8 'E?;=$;' =8'<' ; 9%<=' %B?'
; G ='8' ; < ;' ?;' ; <=$?8 C' < ;' ?;'B ;<'H%=B'?<9 ;=;:'
8' ;@<99' ?;' G@? < ;9D <=:' ;%9< %G9'@ ;99;:' ?%9' ; ;< 'FC'
<>>;$ %=B' 8'8@@89;'<' ;<9G ;' 98' 9< G<C' 8' ?;' ; @% ;' <=:'
E?%$?' $8G :'9$< $; C' ?<A;' F;;='@ ;A;= ;:'FC' <=' < C'8>'<='
?G=: ;:' ?8G9<=:' ;='=AC' %B? '9GBB;9' 8' %B=8 <=$;'<=:'
@ %:;' ?<' ?;'@GF %$';=; C'?<:' F;;='9G>>; ;:' 8' ;9$<@;D FG
] ?;' > %$<='<=:'68 ?%$' %G @?9'<;' ;99'B 8 %8G9' ?<=' %=9'9<>;'
<=:'F 88: ;99'A%$ 8 C'%=' E?%$?'=;% ?; ' >8 G=;'=8 ' ?;'A< 8G '
8>' ?;' 98 :%; 9'$<='9GF <$' <=C'@<' '8>' ?;' B;=; < %9' ;=8E='
. "}' - ' $?;'9;$8=:' ; 8A<'8>' ;%9< %G9'> 8 ' ?;' ; 9%<=' 8' ?;' < %<='
E<' ;A;< ;:' ?;' ;M ;=' 8>' ?%9' @; 98=<' ; % ' E?%$?' ?<:'
$8 ;$;:' 8 ' G@@ %;:' ?;' E<=' 8>' :%9$%@ %=;' <=:' $8G <B;'
%> ;;=' B;=; < 9' E% ?8G ' $8=$; ' 8 ' 9H% ' ;:' ? 8GB?' ?;'
8G= <%=9' 8>' ;=%<' <=' < C'8>' ?% C' ?8G9<=:' 8 <=9'
%=< ;= %A;' 8' ?;% '9%B=< 9' ?;% ' <=H9' <=:' ?;% ' ;=9%B=9'
8G ' ?8G9<=:' ; 9%<=9' ;= ;=$?;:' %=' ?;' $< @' 8>' @GF%9'
A<=JG%9?;:'< 89'E% ?8G'<'$8 F< ' ?%9':%98 :; C' G % G:;'
?;% ' G9; ;99' < 9' E; ;' $< ; ;:'< 8=B' ?;' 8<:' <=:' ?;% '
?8 9;9'9G=H' G=:; ' ?;' >< %BG;'8>' ?;% ' <@%:'>%B? ' G ' ?;'
<F9'8>' ?;' 8 <=' @< C' @ ;A<% ;:'8A; ' ?;% ' F ; ? ;=D ?;'
;=%<=9' ; G =;:' 8' ?;% '< ;B%<=$; ?;'$% %;9'8>' < <'<=:'
:;99<' ;9%9 ;:'<'9G:;=' <99<G '<=:'<' ;BG <'9%;B;D <=:' ?;'
$< < % %;9'8>'E< ' E; ;' 9G9@;=:;:'FC' ?89;' 8>' @;9 % ;=$; '
<$% '8 '>8 <'<B ;; ;='F; E;;=' ?;' E8'98A; ;%B=9'@ 8 ;$;:'
?;' <=JG% % C'8>' ?;':<9 ; ='>8= %; D <=:' ?;'< 9'8>' ?89 8;9'
E; ;' $8=>%=;:' 8' ?;' 8 $?%<='8 ' < $'E< ' E?%$?' ?<9'F;;=' 88'
%=G ; C':;9$ %F;:'FC0 ?;' ?%9 8 %<=9'8>' ?;' % ;9 %#

!' 5!5 0% [*1' &'(0% 1#+(%-(' M/ # 3 %' +,' %&-* ' #+'(0%' 0 -*-' *-'(%,*#* ":



?;ʻ F; %<=ʻ <=:ʻ 8G= <%I ʻ <=:ʻ E?89;ʻ < % % ;ʻ $8<9 ;M ;=:9ʻ <F8G ʻ E8ʻ ? 89: ;:ʻ % ;9ʻ> 8=%ʻ ?;ʻ =;%B?F8G ?88:ʻ 8>ʻ ;F%L8=:ʻ 8ʻ #%89;G %G9ʻ <=:ʻ ?;ʻ $8=>%=;9ʻ 8>ʻ % $<99%<ʻ 8 ?ʻ ?;ʻ 98%ʻ <=:ʻ$ % < ;ʻ< ;ʻ ; <M;:ʻ FCʻ ;M$;99%A;ʻ 8%9 G ;ʻ Iʻ E;= Cʻ ;%B?ʻ %A; 9ʻ F;9%:;9ʻ ?;ʻ ?<9%9ʻ <=:ʻ ?%9ʻ :;@;=:;=ʻ 9 ;< 9ʻ $8=A;Cʻ ?;%ʻ < ;9ʻ 8ʻ ?;ʻ 9;<I <=:ʻ ?;ʻ ?8 8E=;99ʻ 8>ʻ ?;ʻ B 8G=:ʻ <@@;< 9ʻ 8ʻ%=:%$< ;ʻ ?;ʻ 9GF ; <=;8G9ʻ $?<==; 9ʻ F; E;;=ʻ ?;ʻ GM%=;ʻ <=:ʻ ?;ʻ <9@%<=ʻ =ʻ ?;ʻ >%; :9ʻ E?; ;ʻ E?;<ʻ 8ʻ F< ;Cʻ %9ʻ 98E=ʻ ?;ʻ;< ?ʻ% ʻ 88ʻ 98>ʻ 8ʻ 9G9 <%=ʻ ?;ʻ<$ %8=ʻ8>ʻ ?;ʻ @ 8GB?ʻ I FG ʻ ?;ʻ ʻ<ʻ 9 < ʻ B <%=ʻ =8ʻ G= %H;ʻ ?;ʻ % ;ʻ 8ʻ $8 %<=:;ʻ 9;:ʻ 9G@@ %;9ʻ ?;ʻ 8 :%=< Cʻ>88:ʻ 8>ʻ ?;ʻ@;8@ ;I <=:ʻ ?;ʻ G9;ʻ 8>ʻF #<:ʻ %9ʻ $8=>%=;:ʻ 8ʻ ?;ʻ @ %=$;ʻ <=:ʻ?%9ʻ =8F ;9ʻ ;ʻ ?;ʻ A%= <B;ʻ %9ʻ 8 ;ʻ@ ; % %>G ʻ ?<=ʻ ?;ʻ ?< A;9 I <=:ʻ ?;ʻ FG Hʻ 8>ʻ ?;ʻ9 ; 9ʻ <9ʻ E; ʻ <9ʻ ?;ʻ JG< % Cʻ 8>ʻ ?;ʻ E%=;ʻ :%9@ <Cʻ ?;ʻ G=N <99%9 ;:ʻ @8E; 9ʻ 8>ʻ=< G ;ʻ ?;ʻ 9< ;ʻ @8E; 9ʻ $8= %=G< Cʻ ;=:ʻ 8ʻ 8A; 9?<:8Eʻ ?;ʻ><$;ʻ 8>ʻ ?;ʻ $8G= Cʻ E% ?ʻ ?%$Hʻ >8 ;9 9I ?;ʻ % F;ʻ 8>ʻ ?;ʻ?% 9ʻ<=:ʻ ?;ʻ>Mʻ 8>ʻ ?;ʻ@ <%=9ʻ $8= %FG ;ʻ 8ʻ ?;ʻ <FG=:<=$;ʻ 8>ʻ=<A<ʻ 9 8 ;9I ?;ʻ E% :ʻ <=:ʻ < ;ʻ <=% <9ʻ ?;ʻ ?8 9;ʻ ?;ʻ 8M ʻ <=:ʻ ?;ʻ ?8B ʻ< ;ʻ ; < H<F Cʻ @ 8 %>%$ʻ <=:ʻ ?;ʻ =< ;ʻ8>ʻ ?;ʻ @?;<9<=ʻ %9ʻ ;M@ ;99%A;ʻ8>ʻ?%9ʻ =< %A;ʻ ?<F% < %8=ʻ 8=ʻ ?;ʻ F<=H9ʻ 8>ʻ ?;ʻ ?<9%9ʻ ?;ʻ B8 :ʻ %=;9ʻ 8ʻ ?;ʻ 98G ?ʻ 8>ʻ ;F%L8=:ʻ E?%$?ʻ< ;ʻ % ʻE8 H;:ʻE% ?ʻ 9G>>%$%;=ʻ @ 8>% ʻE; ;ʻ< 9GFI;$ ʻ 8>ʻ=< %8=<ʻ :%9@G ;ʻ F; E;;=ʻ WG9 %=%<=ʻ <=:ʻ ?89 8;9I <=:ʻ% ʻ %9ʻ =8ʻ G= ;<98=<F ;ʻ 8ʻ F; %;A;ʻ ?< ʻ <ʻ A;%=ʻ 8>ʻ@ ;$%8G9ʻ %; <ʻ <Cʻ F;ʻ ;JG< Cʻ :%>G9;:ʻ ? 8GB?ʻ ?;ʻ $% $;ʻ 8>ʻ ?;ʻ?% ʻ< ?8GB?ʻ ?;9;ʻ 9;$;ʻ ;<9G ;9ʻ< ;ʻ =;B ;$;:ʻ FCʻ ?;ʻ <L%=;99ʻ 8ʻ $8=$;< ;:ʻ FCʻ ?;ʻ@ G:;=$;ʻ 8>ʻ ?;ʻ %=B ;%<=9ʻ ?;ʻ E< ;9ʻ % @ ;B=< ;:ʻ E% ?ʻ @< %$;9ʻ 8>ʻ B8:ʻ < ;ʻ $< ;>G Cʻ 9 <%=;:ʻ ? 8GB?ʻ9?;;@O9H%=9ʻ8ʻ> ;;$;9I FG ʻ ?%9ʻ ;M@;:%;= ʻ ?;ʻ B 8G=:N E8 Hʻ@; ?<@9ʻ8>ʻ< < A; 8G9ʻ><F ;ʻ <>8 :9ʻ<ʻ><%=ʻ% <B;ʻ8>ʻ ?;ʻ E;< ?ʻ ;M <$;:ʻ> 8 ʻ< A% B%=ʻ;< ?ʻ FCʻ ?;ʻ@8E; ʻ<=:ʻ%=:G9 Cʻ 8>ʻ <=$%;=ʻ H%=B9ʻ ?;%ʻ 9% A; ʻ@< <$;9ʻ <=:ʻ B8 :;=ʻ $?< F; 9ʻ 9G @<99ʻ 8G ʻF; %;>ʻIʻ FG ʻ ?;ʻ>< ;ʻ 8>ʻ ?;%ʻ %$?;9ʻ%9ʻ 9<%:ʻ 8ʻ?<A;ʻ ;M$% ;:ʻ ?;ʻ;= ; @ %9%=Bʻ<A< %$;ʻ8>ʻ ?;ʻ B8=<G 9 Uʻ <:% %8=ʻ ?<9ʻ <>% ;:ʻE% ?ʻ 98 ;ʻ$8 8G ʻ8>ʻ ;<98=ʻ ?< ʻ BC@ ʻ@ <= ;:ʻ8=

+-(&61(!%ʻ (0 +ʻ9*-ʻ#9-%&! (*#+-ʻ <ʻ \ʻ %:--#++%*ʻ^ 9-%&! (*#+-ʻ -6&ʻ"%-ʻ %#4"%-ʻ &9 &%-ʻ4ʻ. 5 ʻ / ʻD ʻ. ʻ 5ʻ@ ʻE1ʻ +,ʻ ʻ3#&%ʻ &%1%+(ʻ (&% (*-%ʻ 6&ʻ(% #3 3%&1%ʻ ,%"ʻ ʻ %&ʻ #*&%ʻ (#3ʻ *"ʻ 4ʻ /<Rʻ O%ʻ 05,ʻ "#+2ʻ &%-*,%,ʻ (ʻʻ ʻ -ʻ 1#+-6*#"ʻA& +1%ʻJ +,ʻO*-ʻ%&6,*(*#+ʻ*-ʻ %-ʻ! "6 9"%ʻ(0 +ʻO*-ʻ%>4%&*%+1%ʻ "(%5(ʻ ,%-1&*4(*#+ʻ #"(O% [*1ʻ 1#6+(&:ʻ *+ʻ 1#(*+% >*#+ʻ $*(Oʻ(0%-% iI &-ʻ *-ʻ (0 (#" &#- %(*-(ʻ ,%8ʻ %#&2*%ʻ(ʻ*ʻ ,ʻ*(*#+-ʻ*!ʻ4ʻ ʻ$ "

ʻ"*+:ʻ *-(ʻ (((&ʻ 3ʻ >>>***ʻ /ʻ 0%ʻ 2# ʻ 0,ʻ -*"!%&ʻ 3*+%-ʻ#"ʻ #"%0#-ʻ ((& 1(%,ʻ(0%ʻ &2#+ 6(-ʻ^ (& 9ʻ3ʻ*ʻ4ʻ@@Rʻ 0%ʻ- 2 1*#6-ʻ 0 &,*+ʻ 1#6",ʻ'*+,ʻ+# 2#",ʻ'*+ʻ 3*+%-ʻ&&!%5ʻ#&ʻ%"-%$0%&%ʻ %(ʻ *+2&%= +ʻ"#-(ʻ0*-ʻ0 +,ʻ +,ʻ'##(ʻ(#& -0%$*+2ʻ-#3%ʻ-4%1*3%+-ʻ (ʻ #+-(+(*+#4"%ʻ#"ʻ+ (*!%ʻ2#",

?; ?<9%9 < ;< =; : <: : @8 % ; ? 8 %C ZT ?%$? <=G><$ G ; :
%=; = FG% =<A%;9 <= : %=A; = ; : B;8B <@#$< = @9 ?;
%=B;=G% C 8> ?; 8: ; =9 ?<9 @;8@ ; : E% ? > 8G %9?%=B $% %;9 0
<=: =< %8=9 ?;%9 ? G9F; E ; ; = @<%M%=;<=: ?; <9@%<=
<=: < %A; C E % ; 8F9; A%=B ?; ;9; F <=$; 8> $ % < ; <=:
%= ?%9 <@@ ;?;=9%8= 8> <: ; ?<9 =8 ?;9% < ; : 8 @ 8=8G=$;%
W 8 $?89 ?; 8 <=: 8><= %JG% C 1T
  G ?; %$?;9 8; 8 $?89 9?%=; 8= C ?C8G>>? ?;:< H=;99 8> <==: <>
 $8=I;$ G ; 8 <: % %8=0 <=: % 9 B;=G%=; ?%9 8 C @ ;9;= 9 <=(0# " 8(!
G=%>8 9$;=; 8> G: ;=;99 <=: @8A; C > 8=; ?G=: ; : <=:
 ?% C <=BG<B;9 E; ; 9@8H;= %= ?; < H; 8> %89$G %<9 T
?;C E; ; ?; % @; >;$ % :%8 9 8> 98 <=C 9<A<B; %F;9 8
>%% <% %;9 9;JG;9 ; ; : > 8 ;<$? 8 ?; % = ?;A< ;C9 8> 8G=
 <G$<9G9 0 1Q <=: ?;% 9;@< < %8= E?%$?: % %=%9?;: ?;% @J 0
<=$; G9 ?<A; G %@ %;: ?; =G F; 8> ?;% G9 %$ $<@% < 9
 = ?;@ ;9;= 9 < ;8> %=B ; %< < % <B; %9 <= <99; F <B;
8>?G 9 E% ?%= E88: ;=>;=$; ?; >8 ;99;9 < ;9;< ; :%= ?;
: ;@ ?8>>8 ;9 9 0 ?;@ %=$; C 8E= 8> C < 8 8 < %9 $8=9%9 9 8 ?;EB=
8> E8 ?G=: ; :?8G9;9 <=: < 9 8=; ; :%>%$;<@@; <%=9 8= C 8 ?;
 <B=%>%$;=$;8>H%=B9 E; A;9?%@9 > 8 8=9 <= %=8@ ;<=:
<F8G 9%M C F< H9 <: ;= E% ? ?; > G% 9 8> %=:G9 C <==G< C
$<9 <=$?8 8= ?;$8<9 0 <=: ?; %9 8> 8 $?%= ;M@8 9 %9
 G$? %=$;<9; : 9%=$; ?; =< %A;9?<: 8= C 9 <A;9 <=: ?%: ;9 8
8>>; %= ;M$?<=B;8> ?;$8 <=: 9< E?%$? ?;C @G $?<9; : 0
> 8 ?;9GFI;$ 9 8> WG9 %=%<= 8 < A;9 %B;$<= F;>8G=: 8>Q
 ?; < ?;H=8E ; :B; 8 ?; =<A%B< %8=8> ?; <=$%; = 8 0 ,
$ %%<=9 0 >; E 6 ; ;H9 : ;9% ; : 8 : < ; : 8 @G 9G; ?;>88 9 ;@9 8>
 ?; B8=<G 9 0 <=: ;A;= ?; < H9 8> <= BC@ %<= $8 8=C < ;
89 8= < =; < ; <@@ 8<$? ?; %B? 8> $% $G $%9%8= 9 @ <$N
%9; 8= C FC ?; <?8 ; <=9 8> ?; GM%=; 0 <=: ?;$G ; :
0 ?<% <=: 9E< ?C $8 @ ;M%8= 8> > %$< =8 8=B; : %9 [G ; ?;

%&#,#(' 3 **' 1 G. G/ 4Q /G / 7*#,#&J *16"' 3 *' 4 << %,*('
%--%"*+2 7*#+:- %&*%2%(+, 6-((0 ,"#1 10#"* -(, 4#""#+*6 3
&2#** 6(*! D D
#+(%-F6*%6 -4&*(,%- #*>' 3 >>*' 1 T -(0& % ! 1#6!%"(,% !*""%-
%(+ (*#+-F6 +%-#+(4"6-
= #62 *+!*""% 5 3#*&%-,%' 3 1 ,%3*1 ,%- +-1&*4(*#+-(#3 >>!* 4 << #+
(0% '&*1 + !#: 2%#" ++# +,(0%1#3 3%&1%#" +(*F6*(:
C&%%8 0*-(##* + *3#-(0%+%-0 , '"*&3%, '*+% &+ 111 + (*#+%-,*--*6** 96-
"*+26*-,%-1%+,%&%J +,(0% 3#,%-("*+-1#+(%+((# , , '%(4#-(% +#-(&*-
1>>>' *+(%&4&%(*96- +%2# (*9" 2%-(^!* / RJ 96((0% $#&, +6+1 ,%-%5(1#!%&-
3 6"(*(6,%#" 4 -(*1(*#+- H
Y = ?; <G$<9%<= 9;<@<@; FC 6G9 W8%% ?<% 8 < 9%< %$
8$%; IC MA%% R3 " # \ /

?8G9<=:' < ;' =G F; ;:' %=' ?;' <%=' 8>' ?;' @ %=$;' 8> %=B ; %<
?;' 8 $?%<=' B8A; = ;=' F<b' F; ;=' < E<C<<' @G ;' <=:' ?; ; : % < C'
H%=B:8 D <=:' ?;' <G ?8 % C' 8>' ?$' 8A; ;%#' %G' 8= C' ;9 <%=;:'
FC' ?;' G FG ;=$;' 8>' ?%G' 9GFI;$ 9 ' ?;=;A; ' ?;C' E; ;' 8F;N
:%;= ' ?;' $8G :' ;<:' <' =G ; 8G9' < C' %= 8' ?;' >%; :D' FG ' 98 ;'
><% ?' %G' ;JG%9% ;' 8' F; %;A;' ?< ' ?;' 9%=B ;' %F;' 8>' ?;' G<=%<=9'
E<9' $8 @89;:' 8>' E8' ?G=: ;:' ?8G9<=:' 98 :%; 9' 8 ' I%< ' ?;'
@8@G < %8=' 8>' %=B ; %<' =8E' < 8G= 9' 8' >8G ' % %8=9' 8>' %=?<F%N
<= 9 1T
' E<9' ?;' F8<9 ' 8>' ?;' 8 $?%<=9' ?< ' ?;% ' <=$;9 8 9' ?<:#C^0 0.
$?;$H;:' ?;' A%$ 8 %;9' 8>' ;989 %9D' <=:' ?;' :;>;<' 8>' ?;'
BC@ %<=' %G' ;99' %=$;:%F ;' ?<=' ?%G' 9G$$;99>G' @ 8B ;99' <9' >< ' <9'
?;' >88 ' 8>' 8G= ' <G$<9G9' ?;C' 9G=H ' E% ?8G ' <=C' ; 8 N
<F ;' ;>>8 ' G=:;' ?;' < 9' 8>' C G9' D >8 8E;:' %=' :%9 <= ' E< 9'
?;' 9 <=:<:' 8>' ?;' B ;<' H%=BK(D <=:' @ ;9;= ;:' ?% ' ;A; C' >%> ?' '
C;<' E% ?' 8=;' ?G=: ;:' F8C9' <=:' <9' <=C' A% @=9' ?;' >T11 T11
@ 8:G$;' 8>' ?;' <=: 11' ; ' ?;' <$$;@ ;:' ?%G' %H;' ?;' B8:_# < '
<=:' ;F8=C' 8>' =:%<' ?;' > <=H%=$;=9;' 8>' ?;' <F9' 8 ' ?;'
=;B 8;9' <=:' %A8 C' 8>' ?%8@%<' D ?;' 8 $?%<=9' E; ;' =8 ' 9GFI;$ '
8' ?;' :8 %=%8=' 8>' <' 9< <@' <=:' ?;C' $8= %=G;:' 8' ;=I8C' ?;'
=< ;' <9' E; ' <9' 9GF9 <=$;' 8>' =< %8=<' %=:;@;=:;=$; 1# > ; '
?;' >< ' 8>' ?;' ; 9%<=' ; @% ;' % ? %:< ;9' H%=B' 8>' 8= G9 '
<:::' 8 $?8G' 8' ?;' E%:;' $% $;' 8>' ?%G' :8 %=%8=9' 8=' ?;'
GM%=;' D <=:' E?;=' ?;' =< %A;9' @ ;9G ;:' 8' ;JG;9 ?< ' ?%G'
98=' %B? ' ;%B=' 8A; ' ?; ' ?;' F8G=:' ?;' < F% %8G9' C8G ?' %='
$?<%=9' 8>' B8 :' <=:' :; ;B< ;:' <' 9; A<= ' %=' ?%9' @ <$; ' ='
@G 9G%' 8>' % ? %:< ;9' ?;' 8 <=9' <:A<=$;:' 8' ?;' F<=H9' 8> ' E'
?;' >%<9%9' <=:' ?;% ' B< ;C9' <9$;=:;:' ?;' %A; ' % ' ?;C' ;<$?;:'
?;' $< @' 8>' 8 @;C' <=:' ?%9' ;B%8=9 11' G ' ?;' 9;=< ;' <=:'
<> ; E< :9' ?;' ; @; 8 9' :%9:<%=;:' 8' ;:G$;' ?< ' :%9 <= ' <=:'
G9; ;99' $8=JG;9 ' %= 8' ?;' >8 ' 8>' <' @ 8A%=$; ' ?;' >< % C' 8>'
<' 6 ;;H' ?; 8 %$%<=' E<9' @; % ;:' 8' ;%B=' %=' 8 $?89' <=:' ?;

(& 9#' 3' >*' 4' @ /' D' `' b' +*9%&(*' %" (*#+',%" ' *+2&5'"%' %(' $%'
36-(' !#*,' (0% 1#+(& &:' %>(&%3%' #" 0 &,*+' $0# ""#$-' +# 3#&% (0 +' DG GGG'
+0 9(+(-' (# -644":' +' ++6 '" %>4#&((*#+' #" DGGG'-" !%-U +' 9-6&,*(:' 6+K
$#&(0:' #"(0 (')6,*1*#6-'(& !%"%&
=' %&#,#(' 3' ***' 1' @' %%' *+' 3' !**' 1' @ ' (0%*& &3-' +,' -%& !*1% *+' (0% %> '
4%,*(*#+' #" %&>%-' 2 *+-(' C&%%1%
"!' %+#40#+' $0# 0 ,' %+1#6+(%&%,' (0% #"10* +-' *+' 0*-' &%(&% (^ + 9 -*-' *'
! ' 4' <DG' <.<' <. ' %,(' 6(10*+-#+U +,' A#-(%&-#-' 7*--%&((*#+' 4' /< / ' *+'
4%"3 +7-' +2"*-0' !%&-*#+' !#"' ** R' -(:"%-' (0% 3' * ' %' #&% (0% 1#+F6%-(' #"
(0&, (%-' (0%:' &% + 3%,' 9:' 44* +' &#-' *4%(+# 3' ^,% %"' *(0&*, (*1# 1
/ ' (# 3' *' 4' ' #" (0% " -(' +,' 9%-(' %,*(*#+' 9:' #0+' 10$%*20 %6-%&' *4-* -
@ /' < !#"-' " &2% #1(!#R
0D' 0% 1#+F6%-(' #" #"5#-' 9:' *(0&*, (%-' +,' #34%:' *-' 3 &8%,' 9:' '3* +'
^,% %"" ' *(0'*, (R' +,' "6($)0' *+' *(' #34R

@ ;$;@ 9 8 I%;%/ ; %B%8= > ; ? ?; : ;$;<9; 8> ?%g >< ?;
`< ?G9 E<g ;M< ; : 8 ?T ;B< : %B=% C FC ?; ><A8G 8> ?;
B ;< H%=B D FG ? ; O%8G/ C8G ? <F?8 ; : ?; $; ; 8=%;g 8>
?; <B% <=: 98GB? % = ?; @< <$; 8> 8=9 <= %=8@ ; <=
8 ?8 : 8M F<@ %9 <=8F ; E%>; <=: ?; < %<=$; 8> ?; ; @; 8
WG9 %= ?; H%=B 8> <L%$< E<g 98 ; = C %=A;9 ; : E% ? ?;
: %< : ; <=: ?%g $ <H <=: G=%$ 8> E?% ; 9% H E% ? < B8 :
F8 : ; : %9@ <C; : = %= %$? ; F 8% : ; C ?; >%BG ; 8> ?%g =; E
@< 8=D E?8 988 ?; : ?; I; < 8G9C 8> ?; ; 9%<= $8G <=:
; M$G9; : ?; ; A8 8> 8 $?89 FC ?; A; =; <F ; =< ; g >
?89@% < % C <=: ; %B%8= ?; $8 8= %= ; ;9 8> F8 ? ; @% ; g
% @89; : 8= ?; 8 $?%<=9g ?; : G C 8> BG< : %=B ?; @<99; g 8>
8G= <G$<9G9 E?; ; < E< 8> 9%M C % ; g %g =8E ; ; > ; = : ; :
FC ?; 8= ? C 9; A%$; 8> ?; G9JG; ; ; 9 8> %=B ; %< T#
G ?%g ?8=8G <F ; $8==; M%8= E<g 988= $8 G@ ; : FC >?;
<A< %$; <=: < F% %8= 8> ?; 8 <=9 ; B <: ; : > 8 ?; <=H##$8%
8> ?; < %; 9 ?; <L% E ; %=$; 99<= C ; %=: ; : FC E8 : 9 <=:
<$ %8=9 8> ?; % : ; @; = : ; 9 < ; ? ; : %9 <=$; 8> < : <C g "9G9T
I8G = ; C F; C8= : ?; @9< G9 ?; C F; ?; : ?; %9%=B >8 ; 9g 8>
; < T ?%$? $8 <=: ; : ?; < % % ; $8G= C 8 ?; 98 : ?
8> ?; ?<9%9 =9 ; <: 8> F; %=B @ 8 ; $; : 0FC ?; A< 8G 8 N
$?89 E<g %=9G ; : FC ?; %$; = %8G9=; 99 8> >8 ; %B= ; $; =< %; 9 D
?; F; =; >% g 8> $8 ; $; E ; $8=A; ; : %= 8 F<9; <=: A; M< %N
8G9 8=8@8 C <=: 6GF<L; 9 ?; =< %A; @ %=$; E<g ; : G$; : 8
< @<B; <= 8> 8C< C FC ?; 9G@; %8 %=> G; =$; 8> ?; 8>%$; g 8>
WG9 %=%<= %9<@@8%= ; : %= ?; % ; M@; $ < %8=9 8> ? %9 %<=
A% G; ?; %=: %B=<= <L% ; @89; : 98 ; $8=>%: ; =$; %= ?; IG9 %$;
8> <= G=F; %; A; > ; < @ %A< ; <99G <=$; F< ?; % < F<90
9<: 8 9?8G : =8 F; : ; %A; ; : 8 ?; 8 <=9 ?; C @GF %$ C
98 %$% ; : ?; > %; =: 9?%@ <=: <%: 8> ?89 8; 9 ?; 9<B<$%8G9
8=< $?%=9 <= C : %9$; =; : ?; G9; <=: % @8 <=$; 8> 8 $?89
<=: ; : % < ; : < @ <= 8> $8=JG; 9 E?%$? E<g ; =; E; : < ?;
; =: 8> < ?8G9<=: C; < g FC ?<? FF<9 ?; E%9; 9 <=: 89
@8E; >G 8> ?%g 9G$$; 998 9 1 1 %g < F% %8= E<g >% ; : FC ?;

*2 #0+ " " 0&#+ (#&+ ** 4 <. <@ 0%#40 +%- . . % *-(*-%%
3 4 G< 0% 1 *- 6(0%+(*1 96 (0% (% -%%*4- (## &%1%+(+-4% 8*+2
#'' (0%*& %&-* + ** +1%' (0% [* 1#+(%34#& &*%- #'' 6-(*4* + %34"#: (0% 3#-(
#9-#'%(% $#&, - (! ? !L$ ' 4 :#!#(EC #6", *%: 9%"#+2 (# 1#+k
+%>*#+ $0*10 9 , +#(9%%+ , *--#"!%, 9#!%($%+(: :% &-Z
< 0%' -#"%' !%-(*2% #" %(& - 69-*-(- *+(0% $&*(*+2-' #" &#1#4*6- +, 2)(0* -
#-(#'' (0% (#$+- +, 1 -("%-' #'' [*1 3 : 9% '#6+, 9 : 1#34 &*+2 (0%*& + 3%-
+, 4#-*(*#+ $*(0 (0% 3 4 #'' *+2&%"* *0 39%&(* &#--%(+ e 4 G<
4" 1%- %(& '#+ 3 9 +8 #"(0% 0#&68 ^ # - $0*10 "#$-"*+(# " 18 % -#6(0 "
(6 3 %' -0#$-(0 ((0% C&%%8 $&*(%&- 0$! 26% *, % -'#'' (0% 2%#2& 40 : +, '
1#+'6-%, (($# &*!%&- (0% +, *#+ 6+, %& (0% 0 3 S 5 -*- b
: %%' (0% 36-*+2 "%((%&- 9'' *%(&# """ ((0% =4 3 (& !%""%& ^ * 22*

?8@d' 8>' <G=$?%=B' < ; 9%<=' =<AC' ' ?;' ?<9%9 ' 8>' $8 <=:N %=B' ?;' > <:;' <=:' =<A [< %V=%' 8>' ?;' GM%=;' 9;<' 8>' :;98 < %=B' ?;' $8<9 ' 8>' 8= 9' <=:' c ?C8?% ' 8>' :%9 ;99%=B ' @; ?<@9' 8>' < <$H%=B ' 8=9 <= %=8@ ;' <=:' 8>'@; 9G<:%=B' ?;' < F< %<=9' 8>' G 8@;' 8' 9;$8=:' ?%9' < 9' <=:' $8G=9; 9' <B<%=9 ' ?;' $8 8=' ;=; C' 8>' <=H%=:' =:;' ?;' @ ; ;=$;' 8>' <' $C ?%<=' E< ' ?;' 9% ;= C' ;:' ?%9' 88@9' 8' ?;'> 8= %; 9' 8>' F; %<'# ?;' 8 0' $?%<=' BG%:;9' E; ;' @ ;@< ;:' 8' $8=:G$ ' ?; ' ? 8GB?' ?;' E88:9' <=:' < 8=B' ?;' @ ;$%@8$;9' 8>' 8G=' <G$<9G9' 0' <=:' <' =< 8E' I ?' <9' <F8 %8G9 C'>8 ;:' %= 8' <' 9<>;' <=:' 9@<$%8G9' ?%B?E<C' >8 ' ?;' < $?' 8>' $<A< C' <=:' ;A;=' >' ;@?<= 9' 6GF<L;9' <%:' ?%9' @; 98=' <=:' :%<:; ' <' ?;' >;;' 8>' ?;' H%=B' 8>' ; 9%<' 0' ?%9' 8 0' $?%<=9' % % < ;:' ?;' 9GF %99%8=' 8>' ?;%' @ %=$;' 0' <=:' <> ; ' ?;' E< 9' 8>' ; <' ?<:' F;;=' 9?<H;=' ?;' 8 <=' B< %98=' @ ;A;= ;:' FC' <' $<@% G < %8=' ?;' % @;=:%=B' >G C' 8>' ?;' <9 ' <99<G ' G ' ?;' <L% 988=' :%9$8A; ;:' ?< ' ?;% ' % @< %;=$;' ?<:' G B;:' ?; ' 8' $?889;' <=' ;A% ' 8 ;' %= 8 ; <F ;' ?<=' ?;' $< < % %;9' E?%$?' ?;C' 9 8A;' 8' ;9$<@;' ?;' 8=8@8 C' 8>' 9< ' <=:' $8 =' E<9' ;>>;$ G< C' ; 8A;:' FC' ?;' 899' 8>' ?89;' A< G<F ;' $8 8:% %;9 ' ?;' <G ?8 % C' 8>'<' 8 <=' ;B%9 < 8 ' E<9' 9G$$;;:;:' FC' ?;' @ %:;' 8>' <=' %;= <' :;9@8 ' E?8' F;?; :' ?' ;JG<' :%9:<%=' ?;' 9 <A;9' E?8 ' ?;' ?<:' ;M< ;:' <=:' ?;' H%=B9' E?8 ' ?;' ?<:' FG F ;:' F;>8 ;' ?;'>88 9 88 ' 8>' ?%9' ? 8=;' ?;' <:8 < %8=' 8>' >% ;' E<9' %= 8:G$;:' %= 8' 8 $?89' FC' ?;' L;<' 8>' ?;' <B%0' ?;% ' %= 8 ; <= ' 9@% % ' @ 8A8H;:' ?;' >; A8G ' 8>' <' ? %9 %<=' @;8@ ;' 0' <=:' ?;' @ ;IG:%$;' 8>' =< G ;' 8 ' ;:G$< %8=' E<9' E8 =:;:' FC' ?;' % @%8G9' @ <$ %$;' 8>' ;M@89%=B' ?;' :;<:' F8:%;9' 8>' ?;% ' @< ;= 9' 8=' ?;' 9G % ' 8>' <' 8> C' 8E; ' 8' ?;' $ 8E9' <=:' AG G ;9' 8>' ?;' <% T1' 8=9$%8G9' 8>' ?;' %=$;<9%=B' ?< ;:' E?%$?' ; < :;:' ?;' ;M;$G %8=' 8>' ?%9' B ;<' :;9%B=9 ' ?;' IG9 ' G9?% A<=' ?<:' 9;$; C' B%A;=' 8 :; 9' 8' <99<99%=< ;' ?;' H%=B' 8>' ?; <L% ' 8' <=9@ <= ' ?;' @;8@ ;' %= 8' 98 ;' :%9 <= ' <=:' <=:' 8' >%M' <' ><% ?>G ' <=:' E< %H;' $8 8=C' 8=' ?;' F<=H9' 8>' ?;' ?<9%9 ' ?;' E< $?>G ' I;< 8G9C' 8>' ?;' 8 $?%<=9' >8 ;9<E' <=:' <A; ;:' ?;' <@@ 8<$?%=B

(#3 ' **' DG@' DG ' < <' D /' D ' D ' <GGJ' (#3 ' *+' 4 ' . ' D@R ' +' (0%' :% &-%' ') 3 ' +,' * #' 0% 1#+!%&-%,' $*(0' 0 0' 99 -' +,' -(&#+2":' %+1#6& 2%,' ' ,%-*2+' $0*10' 3*20(' 0 !%' 6+*(%,' %&-*' +,' 6&#4%' 2 *+-(' (0%*&' 1#3 3#+' %+%+*:' (0% 6&8

 OS %% %&#,#(6-' ^ ' *' 1' .G' 4 ' R' *&**# -4% 8-' $*(0' ,*'1*,%+1%' &10%&^(#3 ' O' 3Z' &**%) 0' #(%-' 6& %&#,#(%R' &#1#4*6-' ^ %&-*1' 3 *' 1' **R ' +,' 2 (0* -' ^3' **' 4 ' DR' 0*-' 4& 1(*1%' 2&%59"2'(# (0%' Y%+, !%-(' ^ :,%',%' %"*2' %&-' 1' <.' 4' . .D R',%3#+-(& (%-' (0 (' (0%' 96&* '" #"' (0%' %&-* +' 8*+2-' ^ %+#40#+' :&#4 %,' !**8' 4 '5/ ' _1' @ba' ' T !(%!' ! R ' ' ':') *' = C&%%8' '*1(*#+ ' +,' (0 (' (0%*&0$ 9-' 1#6",'9%' 0#' 3#&%' (0 +' 1%+#(40-

G%= ?;% ;@;= <=$; E<9 <$$;@ ;: < 8=9 <= %=8@ ; OC
?; @ G:;=$; < ?; ?<= ?; $; ;=$C > WG9 %=%<=D <=:
?; $8 <=:;: <B%9 ;G9 E% ?9;A;= ?8G9<=: 8 <=9 <=:
8=; ?8G9<=:8>?;`<=%8;M@; ?; ; 9%<=9>8 ?;$8<9
8> ?;GM%=;

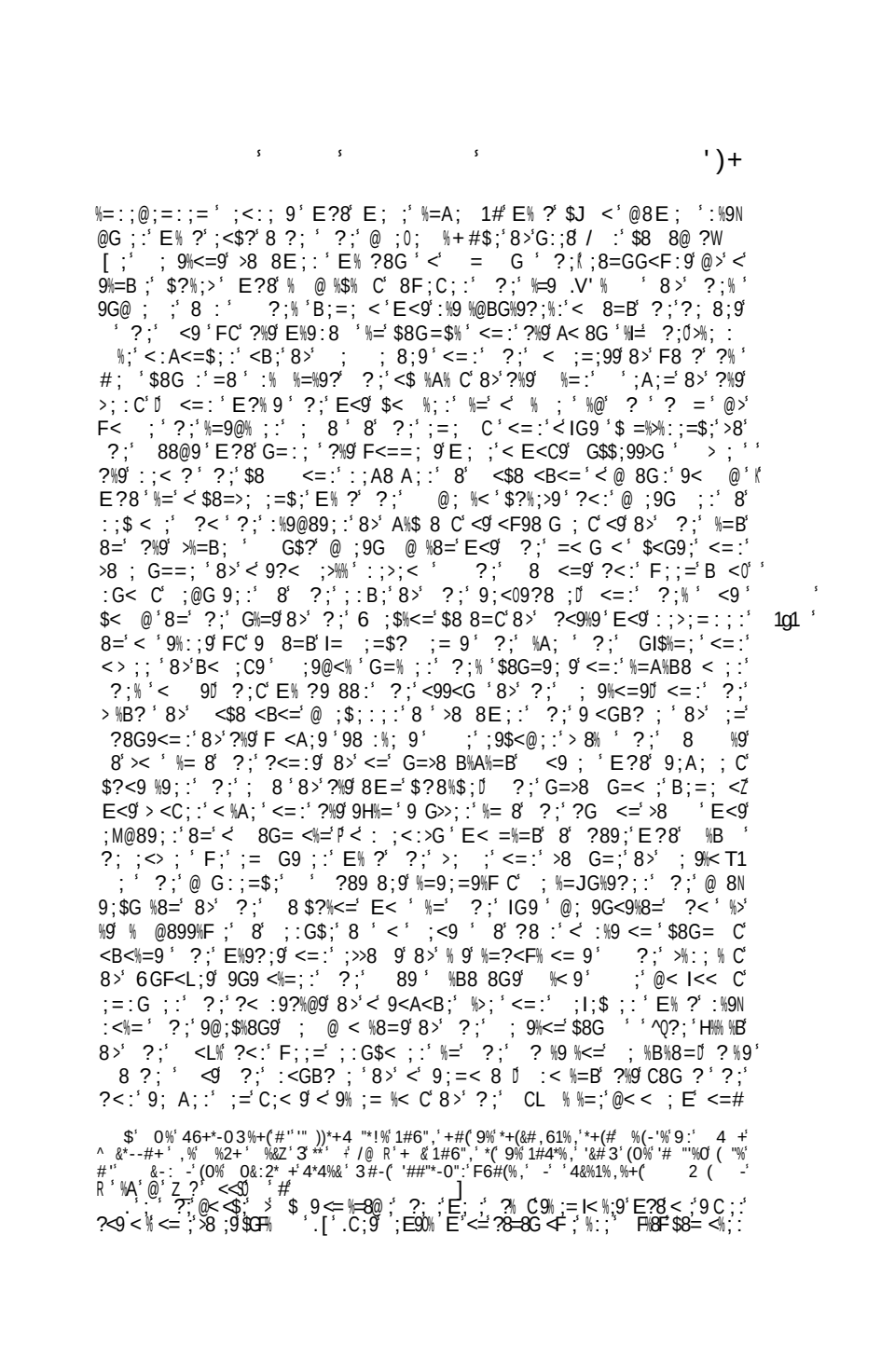
]

?;9%;B;8> ; <E?%$? ?; 8 <= B;=; < E% ?; <%:8>9%;B;8
?; <L%% ;:%< ; C G=:; 88H %9 8=;8>?; 89 ; < H<F ; .@
<$ %8=9 8>?;<B; ?;$% C E<9 9;< ;:8= <$ <BBC 8$H E?%$?
?G=B 8A; ?;9;<=:$8 G=%$<;: FC <9;;@ <=:=< 8E
@< ?E% ?? ;<=: %=$;?;<@@ 8<$?E<9 :%>%$G ?;< <$H
%B? F; :;; ;:% @899%F ;D ?; ; 9%<= $8=JG; 8?<:
9 ;=B?;=;: ?; >8 %>%$< %8=9 8> WG9 %=%<=D <=: ?; @ <$;9
;<9 %=<$$;99%F ;E; $8A; ;: FC <:;%8=<FG E< H9 =?%9
% @8 <= >8 ;99 ?; A%B% <=$; 8> ?89 8;9?<:;@89% ;: <
<B<L%=; 8>8>>;=9%A; <=:;>;=9%A; < 9 9G>>%$%;= >8 >%A; % ;9
?; =G F; =8 8= C 8> ?; B< %98= FG 8> ?; F;9%;B; 9 ?; N
9; A;9 ?; 9 8$H 8> >8G <=:9< @ 8A%9%8=9 E<9 <:;JG< ; 8
?; $8=9G @ %8= 8> >%A; C ;< 9D ?; E<= 8> E%=; E<9 9G@@ %;:
FC A%=;B< <=:Y8>\B <%= >8 E?;=$; 9 8=B %JG8 E<9 ;MN
<$;:D <=: < %@ ; <JG;:G$; G:;: ?; :%%B;=$; <=: ;A;=
?; 9G9@%$%8=9 8> ?; ;=; C G ?; >% ;9 :;>;=$; 8> ; <
<9 @ <$;: %= ?; A< 8G 8> >% ;;= ?G=: ;: ; 9%<=9 E?8
;9%9 ;: ?; <99<G 9 8> ?; 8 <=9 E?%9 %= <98> ; A;%= 8>
;< ? < %=; E<9 9;$; C @; >8 < ;: ?; E< 9G@@8 ;: FC
9 ;=:; <=: ; @8 < C @ 8@9 ?G=B 8 ; %=B %= ?; <% D FG
<B%9 ;G9 :; <C;: ?; < <$H % ?; ?<: 9;$G ;: < 9@;$%>%$
;$8 @;=9;D <=: ?; 8E= E<9 ;%;A;: F;>8 ; ?; ; G = 8>
?%9 ;99;=B; >8 8=9 <= %=8@ ; ?; ; 9%<= B< %98= E<9
; ;:G$;: 8 >8G ?G=: ;: = 8>E?8 =8 8 ; ?<=>%> C E; ;
;M; @ > 8 9%$H=;99 8 E8G=:9D C; 9G$? ?<: F; ;= ?;%
%=> ;M%F ;@; 9;A; <=$; ?< ?; C $8=$;<;: ?;% 899;9>8
?; ;=; C FC ;=:G %=B E% ?8G <G G ?; 9%B? <=:
@G ;>C%=B 9>;=$? 8> ?; :;<: F8:%;9 8> ?;%; ;A;= ?G=: ;:
$8 @<=%8=9 > ; ?;%:; %A; <=$; ?; F ;<$?;9 E; ;? <9 % C
9 8@@;:E% ? 9<=:0F<B9 D ?; %=; E<9 ;@ ;=%9?;:E% ? ;< ?D
<=;E E< E<9 ; ;$;:8= <>< ;8> 9GF9 <= %< % F; D <=:
<>;9? B< %98= 8> ? ;; ?8G9<=: ;= E<9 9 <%8=;: <
8 9G9 <%= ?; <F8G 9 8> <9;$8=:9%;B; ?; 8@; <%8=9 F8 ?
8> ?; < <$H <=: ;>;=$; E; $8=:G$;:E% ? 9H% >G 8F9 %N
=<$C D <=: ;<$? @< C:; %A;:G9;>G ;998=9>8 ?; M@; %;=$;
8> ?;% @<9 >< G 9 F< ; %=B < E<9 %=A;= ;: 8> ?B?
$8=9 G$ %8= <=:@8E; >G ;>>;$ D % E<9 <=9@8 ;: <=: E8 H;:
FC ?; ?<=:9 8> >8 C 98 :%; 9D <=: <9 ?; 9 8=;9 E; ; 889;=;:

(2

FC 0<B & C < (9 8H;9 <E A & <% ; A0<E 8=B % 8= ?88H9
> 8 < ?; < > 8%= ?89; E/?9 < 9?8E ; 8> :< 9 E<9 %=N
$;99<= C @8< ; : 8= ? ; ?;<:9 8> ?; <99<% <= 9 FG ?;C E ;
89 :<=B; 8G9 C <==8C; : FC <>%; C $8 @89% %8= 8>9G @?G <= :
I0<5 ; :2 E?%$? %= 8 $?89 %B? E% ? 98 ; @ 8@ %; C F; =< ; :
?; 8% 8> ; : ; < >9%M ?8G9<= : 8 <=9 E?8 8G= ; : ?; ;
<;< %%#W<: : ; 9 ?;% B; =; < ;99<9 E<9 ?; >% 9 < B< <=
A; ; <= 8>9;A;= C C;< 9 8><B; ?; $8G <B;8> ?;% ; <: ; ?%9
>< <=: ;M ; ; :<=B; <=% < ; : ?; % ;9%9 %F ; ;>>8 8> ?%9
88@9 <=: ?;% @ ;A<% %=B =G F; 9 8@@ ;99; : ?;09 ;=B ?
E% ?8G 9GF:G%=B ?; 9@% % 8> ?; ; 9%<= B< %98= ?; >< ;
8> ?;9; A< %<= ; = : ;9; A;9 8 F; 8 ; :%9 %=$ C =8 %$; :
;A;= ?G=: ; : ?<: @; %9?; : %= ?; 9%;B; E8 ?8G9<=: ? ; ;
?G=: ; : 9G A%A; : 8 : >; =: ?; F ;<$? =; ?8G9<=: <=:
9;A;= C E ; ; : ;9 8C; : E% ? >% ; <=: 9E8 : %= ?; <9 <99<G
<=: %>9;A;= ?G=: ; : <=: ?% C E ; ; <: ; @ %98=; 9 8= C
;%B? ; ;= < 8=B ?; E ; ; >8G=: E% ?8G ?; < H9 8> ?8=8G N
<F ; E8G=:9 ?; ; <%=%=B >%A; ?G=: ; : ;9$<@; : %= 8 ?;
$% <: ; E?%$? ?; C <%= <%=; : E% ?8G <=C ?8@;9 8> ; %;>
;I;$ %=B ?; ><% ;9 ; 9 8>$<@% G < %8= <=: 9; A%$; % ?;C
E ; ; 89 %= ?; > < ;9 Q ?;C : %; : ; %= 8F; : %; =$; 8 ?; $8 N
<=:9 8> ?;% @ %=$; <=: 9G$? ;M< @ ;9 8> 8C< C <=: A< 8G
%B? ; M$% ; ?;% $8G= C ;= 8 : ; ; :9 8> ;JG< : ;9@<% <=:
8 ; @ 89@; 8G9 ;A;= ?; %=9 <= : ; 8 % %8= 8> ?; E8 H9
8> ; < $8=>;99; : ?; <9 8=%9? ;= <=: <@@ ;?;=9%8= 8> ?;
$8=JG; 8

01?; 8?G= @< <= E8G : ?<A; @ <%9; : <=: @% %; : ?; A% G; 8> ?;9;
?; 8%$ 9 <A;9 FG ?; ; :%8G9 E< >< ; <=: < ; =< ; 9G$$;99 8>
?; 8 <= <=: ; 9%<= < 9 $<==8 : ; <%= ?; < ; = %8= 8>
@89 ; % C < ?; >88 8> 8G= <G$<9G9 ?; <:A<= <B;9
8F <%=; : FC ?; 88@9 8> WG9 %=%<= E ; 8 ; > ; JG; = <=:
9@ ; =: %: FG ?; >8 $;9 8> ?; B ; < H%=B E ; $8= %=G< C
9G@@ %; : % ?;C < 8G= ; : 8 ; %B? ; ; @?<= 9 <=: 9;A; = C
?8G9<=: ; = %=$ G:%=B E ; A; ?8G9<=: $C ?%<= < %;9 <=:
<F8A; ? ; ; ?8G9<=: % ; % ;9 E?8 : ;9$; =: ; : FC ?;% > ; ;
$?8%$; > 8 ?; ?% 9 8> C $<=%< <=: E ; ; JG< C >8 %:<F ;
%= $ 89; 8 %= :%9 <= $8 F< ?; 9%;B; 8> $?9;8@8 %9 <
=< ; % @89; : 8 $8 G@ ; : FC ?; 6 ; H9 E<9 <%9; : E% ?
98 ; 899 <=: @ ; $%@% < %8= FG ?; ; 9%<=9 8$$G@%; : ?;
@<99;9 8> F; %< 8 $?8b E<9 ;=9 <A; : FC ?;% >8 9 <=:
B< %98=9 ?;C : ; A8G ; : ?; 9$<= C 9G9 ;=<=$; 8> ?; @; 8@ ;
<=: ?; @ %=$; 8> ?; <L > ; : %= 8 ?; 8G= <%=9 = ?;
8 <= < @ ><% ? <=: : %9$%@ %=; E ; G=H=8E= <=: ?;



')3 ‘ 7 ‘ ‘

?;‘< ;<9‘8>‘<=‘G%%@ :‘9<<C‘E; ;‘<‘ 8%A;‘8>‘< <$? ;=‘<9‘
E; ‘<9‘8>‘$8 @<%= ‘ G‘?:‘ 8=B‘$8= %=G<=$;‘8>‘?%9‘9G>>; %=B9‘
;M8 ;:‘>8 ‘?% ‘<‘=<H;:‘ ;@ ;9;=<%8=‘8>‘?;‘ G?0 <=:‘
G?‘E%9‘<=‘ =@< :8=<F ;‘ %F;‘8=‘ ?;‘ %;G ;=<= 9‘8>‘WG9 %=%<=‘
KE?8%‘<=%%:9‘?;‘:; <C9‘8>‘<‘ G%=8G9‘E< ‘?<:‘9@< ;:‘?%9‘;=; %;9‘
<=:‘ < @ ;:‘8=‘?%9‘< %;9‘ ?;% ‘ <%$%8G9‘%=>8 <%8=‘@; 0‘Q
G<:;:‘?;‘; @; 8‘?<‘?%9‘><% ?;99‘A<99<‘< ;<:C‘ ;:%<;:‘
<‘9;$8=:‘:;>;$%8=0<=‘8:;‘E<9‘%99G;:‘8‘9;=:‘?% ‘@%98=;‘8‘
8=9 <= %=8@ ;0<‘ ;<$?; 8G9‘$<G9;‘E<9‘%=9; ;:‘?<‘?;‘ %B?‘
F;‘ <E>G C‘H% ;:‘%=‘$<9;‘8>‘ ;9%9 <=$;0<=:‘6GF<L;9‘E% ?8G‘
< 9‘8‘9G9@%$%8=‘8>‘:<=B; ‘E<9‘9‘<FF;:‘%=‘ ?;‘9;$G%C‘8>‘<‘
>%;=:C‘%= ;A%;E‘ =‘?;‘>% 9‘ 8 ;=9‘8>‘ <B;‘<=:‘ :;9@<%‘
?;‘ 8$?%<=9‘E8G:‘?<A;‘9<$ %>%$;:‘ ?;%‘$8G= C‘<=:‘ ;%B%8=‘
8‘?;‘B<%>%$<%8=‘8>‘ ;A;=B; ‘ G‘?;‘<G?8%C‘<=:‘;8JG;=$;‘
8>‘?;‘E%9; ‘>;E‘8F<%=;:‘<‘9<G<C‘@<G9;0?;‘A%$8C‘8>‘?;‘
?<9%9‘ ;98 ;:‘?;‘ ; 8‘8>‘?;‘ 8@%<=‘< 90<=:‘?;‘; @; 8‘
E<9‘98%$%8G9‘8‘<F98A;‘?%9‘8E=‘=< ;‘>8 ‘?;‘% @G<%8=‘8>‘
8>8G‘<‘ G:; ‘ ‘IG:B;‘8>‘9;=<8%‘<=H‘<9‘$8 %99%8=;:‘
18%=JG% ;‘%=8‘?;‘$8=:G$‘<=:‘:;<?‘8>‘?;‘H%=B‘8>‘?;‘ <L%P‘
;‘<$;@:;:‘<‘ ;C‘ %FG=<‘;=$8 @<99;:‘FC‘?;‘ %=%9 ;9‘8>‘
IG9%$;‘<=:‘@G=%9? ;=0 %=‘ ?;‘@ ;9;=$;‘8>‘F8?‘=< %8=9‘?%9‘
;M <8 :%=<C‘$<G9;‘E<9‘@ ;<:;:‘<$$8 :%=B‘8‘?;‘>8 9‘8>‘$%A%‘
IG %9@ G:;=$;0<=:‘98 ;‘9< %9(% $%8=‘E<9‘B<= ;:‘8‘<=‘%=N
IG ;:‘@;8@ ;‘FC‘?;‘9;= ;=$;‘<=:‘;M;$G%8=‘8>‘?;‘ ;<=;‘
$% %=<9 11

=‘@;<$;‘?;‘H%=B‘ >‘ ;9%<‘$8= %=G< C‘98GB?‘?;‘@ ; ;=$;9‘
F;EL.:98 %8 %9 8>‘<‘ G@G;‘0FG‘=8‘988=;‘?<:‘?;‘ <H;=‘G@‘<% 9‘?<=‘?;‘;MN
"8.9 @ ;99;:‘?%9‘:;9% ;‘8>‘<‘9<>;‘<=:‘?8=8G <F ;‘ ;<C‘ G %=B‘?;‘
‘,>%; $;9‘?89%%%;9‘?;‘ E8‘ 8=< $?9‘;= ; <%=;:‘<‘ :;$;% >G‘
=;B8 %<%8=0<=:‘9G$?‘E<9‘?;‘9G@; %8%C‘8>‘?89 8;9‘?< 0‘
E?%9‘?;‘ ;< ;:‘?;‘ 8 <=‘ %=%9 ;9‘E% ?‘%=98 . $;‘<=:‘$8=00‘
; @‘?;‘8F<%=;:‘?;‘=89‘G=@ ;$;:;=;:‘?8=8G 9‘>8‘?%9‘
8E=‘< F<99<:8 9‘<‘?;‘ @; %<‘$8G ‘ ?;‘9G$$;998‘8>‘
#C G9<99G ;:‘?;‘ <I;9C‘8>‘?;‘ <9 ;=‘9G=‘<=:‘B<$%8G9 C‘
@; % ;:‘>9‘C8G=B;‘F 8?;‘WG9%=%<=‘ 8‘ ;%B=‘8A;‘ ?;‘
;9‘E% ?‘ ?;‘ @<;‘<=:‘ ;> ;$;:‘9@ ;=:8G‘8>‘ ?;‘ 88=‘
?%9‘B%B<= %$‘9 C;‘E<9‘9G@@8 ;:‘FC‘?;‘ @8 @‘<=:‘;8JG;=$;

(0% & +8‘$*(0#6(‘*34#-*+2‘(0% ,6(%-‘#"‘ -%+ (#& ^ #,#‘ 0%#,#-‘ ‘!*‘(*(‘D<‘
C#(0#''%,‘ ‘#33%+(‘(#3‘**‘4‘D R‘

)"(0%-%)6,*1*‘"& (0%&‘,%"*9%& (*1%^-‘ *"3 +‘#9-%&!%-Rd‘#& (*#+-‘ 2 (0* -‘
^‘***‘4‘ (05c‘ ‘*!‘4‘G a‘0(!**‘0%E%*]JO(%%+‘#&‘ ($%+(:‘4 2%-‘#"‘"-%‘+,‘
'"#&*,‘&'"%(&*1‘ ((*-‘*2+#& +1%‘ &1 &%"%--+%--‘#!%&"##8-‘(0%‘-(&#+2%-(&263%+(‘
2*+-((0%8*+2‘#"‘ [*1 W50-‘'#&3%&(%!5(

8 9:IBG=; @%I; 8 ?; 8C< $?< F; <%=9 % E%>; <=: :<GB? ; 9 E% ? < <%= 8> ;G=G$?9 <=: $< ; 9 < ;=:;: ?; < $? 8 ?; < F<99<:8 D E8 9< <@9 E% ? B8 :;= :%<:; 9 E; ; =G F; ;: < 8=B ?%9 >8 8E; 9D ?; E<9 BG< :;: FC >%A; G=: ;: ?8 9; ?; 89 A< %<= 8> ?; ; 9%<=9D <=: ?; # <= B8A; =8 8> < < E%9; C ;>G9;: 8<: % 0 8 ; ?<= >;E;=IC 8> ?%9 < %< <=: ?89 % ; $< <A<= ?;= 9:%BG=; : 9< G ;: ?; ; @; 8 <=: :; %A; ;: ?%9@ ;9;= 9 F; @<99;: %@= 8= ?9 < 8=9 <=8@ ; E% ?8G :%9$G99%=B <=C 9; %8G9 <><% 9 =9 ;<: 8> F;%=B $8=>%=;: 8 ?%9 @< <$; <=: ;$;%A%=B >88: <=: E< ; >8 ?; ?<=:9 8> ?%9 H;;@; 9 ?; ; 9%<= < F<99<:8 E% ?8G 9@%;9 8 BG< :9 E<9 < 8E;: 8 A%9% ?; @<@% <D <=: ?;>;;;:8 8> $8=A; 9< %8= <=: <:; =I8C;: FC ?%9 :8 ;9 %$9 8>>;=:;: ?; @ ;IG:%$;9 8> <= <B; E?%$? %B8 N 8G9 C @ <$ %9;: ?; <E 8> =< %8=9 E% ?8G $8=>%:;=$; 8 $8G ;9C ^1 C <= G=;M< @ ;: %=:GB;=$; ?%9 %= ; @ ; ; < K,9; A<= F; 8E ?;=8 %$; 8> < 8 <= <B%9 < ; E<9 9;< ;: < ?; <F ; 8> WG9 %=%<= FC ?; 9%:;K 8> ?%9 <9 ;D <=: 8=; ?8G9<=: @8G=:9 8> B8 : %B? F; <99%B=;: >8 ?; ;M@;=9;08> ?%9 I8G =;C <=: ;= ; <%= ;= ; ?; ;@;< ;: <F8G 9 8> 9:%BG=; $8G : @ 8$G ; 8= C < @< %< <=: % @; >;$ G$; E?%$? E<9 < E<C9 @G $?<9;: E% ? ?; ;<9G ;9 <=: ;=;E;: < ?; 98 %$% < %8= 8> ?; CL<= %=; $8G <=C C;< 9 8> > G% ;99 :;98 < %8= ; <@9;: F;>8 ; WG9 %=%<= <=: ?89 8;9 E; ; $8 @; ;: FC G G< <99% G:; 8 $8=9G ?; ;@89; 8> ?;% :;$ %=%=B <B;D < $8=>; ;=$; ?; : 8= ?; > 8= %; ;<$? @< C E% ?8G ;M@;$ %=B 8 B<%= $;:% : %9@ <C;: ?; @8E; ?; IG9 %$; <=: ?; @<$%>%$ %= ;= %8=9 8> ?;% ;9@;$ %A; 98A; ;%B=9D FG =;$;9N 9% C <=: %= ; ;9 :%$ < ;: ?; ;< C 8> @;<$; E?%$? E<9 $8=N $ G:; >8 < ; 8> >% C C;< 9 :% %B;= C $8 @89;: %= ?; 6 ;;H <=: ; 9%<= <=BG<B; <=: < ;9 ;: FC ?; 9;< 9 8> E; A;%= ; @ ; ; 9 ?; %F; C 8> $8 ; $; <=: ; %B%8= E<9 >%M;: <=: :;>%=;: D ?; < %; 9 8> ?; ; @; 8 <=: ?; B ; H%=B E; ; %=$ G:;: %= ?; 9< ; F;=;>% 9 <=: 8F %B< %8=9D <=: ?; 89 9$ G@G 8G9 @ ;$<G %8=9 E; ; @ 8A%:;: 8 @ ;A;= 8 :; ; N %=; ?; <$$%:;= <:%9@G ; ?< %B? < %9; 8= ?; $8=>%=; 8> E8 ?89 %; =< %8=9 > ; E;= C C;< 9 8> :;9 G$ %A; ?8GB? >;;F ; E< ?; % % 9 9 % ; <%=;: E% ?8G < ; < %8= D

  &#1#4*6- &%4&%-%+(-(0% 4& 1(*1% # (0% C#(0*1 1#6&(# !%++ ^C#(0 3 * 1 @RJ +, '#&%*2+ 39 -- ,#&- 0 !% 9%%4 (&% (- $*(0 (0% - 3%)% "#6-: +, &*2#6& *+ 6&8%: ^ 6-9%F6*6- 4*-(0* 4 0. 01R 6--* ^ #: 2% ,5"% &*6-R +, 0*+ '^ && (*!% # ,% +2%0 $ & !%"- !#" 6 4 "*0&33S ,

')*,

<=:' ?89 8;9' E<9' @; 9G<:;:' 8' ;=8G=$;' ?%9' :<=B; 8G9' $ <% '
8' ?;' @899;99%8=' 8 ' 98A; ;%B= C' 8>' 8 $?89' <=:' % 9' :;@;=:;=' 9 < ;9 ' %$?' %=' ?;' <$$G G < ;:' ;<9G ;9' 8>' ?;' <9 ' ?;'
;M 8 ;:' > 8 ' ?;' 8 <=9' <=' <==G<' @<C ;=' 8>' ?% C' ?8GN
9<=:' @%;$;9' 8>' B8 :' D' <=:' ?;' 9 < =; 9' 8>' ?;' 9G ' ;A;<;:' ?;'
:%9B <$;' 8>' <' %FG ;' %=' % 9' =<H;:' :;>8 % C' =' <' @ ;A%8G9'
:;F< ;' ?;' $?< %8 ' 8>' ;989 %9' <=:' ?;' E?;;' 8>' >8 G=;' E; ;'
<@@ %;:' FC' 8=;' 8>' ?;' %=%9 ; 9' 8>' WG9 %=%<=' E?8' 8F9; A;:'
?< ' ?;' ;:G$ %8=' 8>' = %8$?' <=:' 98 ;' C %<=' $% %;9' ?<:'
;;A< ;:' F;C8=:' ;<9G ;' ?;' A<%=' <=:' < F% %8G9' 9@% % ' 8>' ?;'
< F< %<=' 5 8G' < ;' %9 <H;=U' ;@ %;:' ?;' 8:;9 ' ; 9%<=P
5' ?;' H%=B' 8>' H%=B9 ' ?;' 8 :' 8>' <=H%=:' 88H9' :8E=' E% ?'
$8= ; @ ' 8=' 9G$?' @; C' <$JG%9% %8=9D' <=:' 8>' ?;' ;=' =< %8=9 '
A<=JG%9?;:' FC' ?%9' %=A%=$%F ;' < 9' ?;' ;9 ;; 9' ?;' 8 <=9' <9 '
?;' ;<9 '>8 %%:<F ;U' $$8 :%=B' 8' ?;' %;=<9' ?;' ;@% ;'
8>' G9?> A<=' ;M ;=:;:'> 8 ' ; B<=<?' %=' > <=98M%<=<' 8' ; ;=' 8 ' <F%<' ; %M ' ;' 9GF:G;:' ?;' ;F; 9' 8>' C $<=%<' ;:G$;:'
?;' @ 8A%=$;9' 8>' <FG ' <=:' `<F ;9 <=' 8=' ?;' F<=H9' 8>' ?;'
=:G9 ' F 8H;' ?;' @8E;' 8>' ?;' G ?< % ;9 ' ; %=< ;:' FC ' <='
?8=8= <F ;' ;< C' ?;' G H%9?' E< ' <=:' <: % ;:' ?;' :<GB? ;'
8>' ?;' B ;< ' H?<=' %= 8' ?;' =G F; ' 8>' ?% ' <E>G ' E%A;9 ' %$ 8 %8G9'
<=:' ;9@ J ;:' < 8=B' ?;' @ %=$;9' 8>' 9%<' ?;' B<A>;' <G:%;=$;' %='
?%9' @< <$;' 8>' <:<%=' 8 ' ;9%@?8=' 8' ?;' < F<99<:8 9' 8>' ?;'
E8 :' ?;% ' B%> 9' 8 ' %FG ;9 ' < 9' %$?' B< ;= 9 ' B; 9 '
9 <A;9 ' 8 ' < 8 < %$9 ' E; ;' ?G F C' @ ;9;= ;:' < ' ?;' >88 ' 8>' ?%9'
? 8=;D' <=:' ?;' $8=:;9$;=:;:' 8' <$$;@ ' > 8 ' ?;' H%=B' 8>'
=:%<' ;=' JG%= < 9' 8>' ?;' E88:' 8>' < 8;9 ' <' <%:' 9;A;=' $G @ 9' %='
?;%B? ' <=:' <' $< @; '98> ; ' ?<=' 9% H ' ?;' 9H%=' <9' % ' E<9' ;@8 ;:'
8>' <=' ;M <8 :%=< C' 9; @;= 1T%

WG9 %=%<=' ?<:' F;;=' ;@ 8<$?;:' >8 ' ?%9' < %<=$;' E% ?' ?;'
<' # ?%8@%<=9' <9' %>' ?;' < ; @ ;:' 8' %= 8:G$;' <' @;8@ ;' 8>' 9<A<B;'
=;B 8;9' %= 8' ?;' 9C9 ; ' 8>' $%A% %L;:' 98$%; C' G ' ?;' > %;=:9'
8>' ?;' 8 <=' =@% ;' ?;' MG % ;9 ' 8 ' FC99%=%<= ' <C' F;'
< E<C9' :%9 %=BG%9?;:' > 8 ' ?;' 8 %B%=<' =< A;<' 8>' > %$< GD I%%;

*)(*% 52#(* (*# -' +,' H +(*%-' 9+($++' 6-(*+* +' +,' 0#-&#%-' &%' 1#4*#6-":'
%>4" *+%,' 9:' &#1#4*6-' ^ %&-*1' 3' **' 1' G' <' + ' DS' C#(0*1#' 3' **' 1' **'
>2R' 2 (0* -*"' *!' 4' . ' .D ' +,' %+ +,%& ^*+' %>1 &4(' %2 (' 4' <D .@R'
#+-6"(' &9%:& 1' *-(',%-' +1*%+-' & *(%-' (%&+' **' 4' /. ' .' 0 < DGG

"4# %&9%"#(' * *# ' &*%+(' 4' G 0' D .' D /

*Ng%%' VI9+')-(' (6&%"%' (#3' *(*' 4' .. ' 0*-' & 9' 1 -(' #"' '% (6&%-'
+,' 1#34'%>*#+' $0*10' 0 -' 1#+(*+6%,' <.GG:% &-'^ 6,#'49' *-(' %(#3 3%+('
^ (0* 4*1' 3' *' 1' .]' *+' (0% 1#*#+:' #"' 9:--*+* ' $*+')6-(*':' (0% -6-4*1*#+' (0 (& 1%'
-' $%"" -' 103 (%' 36-(' 0 !% 1#+(&*96(%,' (# '#&3' (0% +%2&#%-' #"' (0% ,) 1%+(
+,' -*+ *" - & 2* (*-

%<=:8>=< G ;?<9>< ;=;:?;=89;98>?;=# ;I$8A; ;:>%;%?;<:9E%?9?<BBC E88 <=:%=B;:?;%>9H%: %?%=N ?; ;=<=:%=:; %F ;F <$H=;99 G E ;8 A;$8 @ ;M%8=8>%;FC99%=%<=9?;?<%9?<@;<=:>;< G ;9:%9%=$ C < H ?; <9<$8 8=C8> <F9 <=:?%9:;9$;=@;:FC ?;;9; F <=$;8><=BG<B;<=:<==;9?;;@8 8><=<=$%;=;%B<%8=<=:?;=< 8E%=;A<F;E;=?;9?8 ;98>?;;:;<? %9%<=%C?<:<%9;:?<=<%8=<F8A;?; ;A;8>>%$<=F<F<%9 ?;%=;$8G 9;E%?# @ <=:?;9G$$;998 98>8=9<=%=;#T1?<:$8 G=%$<;:?;G:%N ;=9 8>?;<9<=:9$%;=$;9?;%A;99;9<:;:8?;%9;8>;C8=ZTT<=:9;A;=H%=B:8 98F;C;:?;;BG98G@;=;@%=$;8> FC99%=%<?;%=:;@;=:;=$;8>?;8;%;9E?8;%B=;:%=?;%$?<=:?<@@C <F%<E<9>%9A%8<;:FC<=?%8@%<=$8=JG;8 ?;: ;E?%9?;;:%<C$<% >8 ?;JG;;=8>?;F<ZTT<=:?%9<F% %8=E<9$<=$%;:FC ;%B%8G9L;<?;W;E9@8E;>G<=:<$%A;%=;MI;<:9;:G$;:?;%=:8>G=<<=@%=$;8>?;8 ;%;9ZTK?;C G B;:?% 8 ;<%<;?;@;9;$G%8=%=>%$;:FC?;@;%<<E9 8=?;%G=>8 G=<;F ;?;=P98;8 <=;$?<=9 ;$B<ZTT ;;
3ØS 0% #&(626%-% 3*--*#+ &%-^ "! &%-^ 36-*#(#3*'#"DG.'&%1(* N !%&-R %&36,%-^ 6&10 -!-^ *"2&*3-!#"**3!'@'4 . R #9# ^ %K "(*#+E1'4 &' "% C& +,$*(0>!'7*--%&((*#+-'5&*-'@D R +,%""%[^ %K "(*#+-',% 05!%+#('4 &(*!R'1#6",#+":'&%"(% #"3#,3+9:--*+*'$0((0%:'0,'-%%+'#&*+!%+(%,' 0% %&**,*(*#+'#" 6,#"406-^ *-(' "(0*#4*1'A& +%4'6&(' "('433%+(&*6- '44%+,*>' 5.R'*+'($%+(:'*!%"+26 2%-' #6"'#,,' "*((" 1#+1'"+*+2*(-' +1*%+(0*-(#&:' %((0%'(+%#" "%(''#& ""*-(0-%6-'(0% 1#+F6%&#&#" %3%+'*-'1%"%9&(%,'*+'+(*#+"-#+2-',"%2%+,-']A#& '1#"+#" (0*-' 0 "%(R'-%% 10"6 39%&2%& !6% 63*-3 0%'"%2%+,'*- 2 42'm Y ((*-'+#(%$#&(0:'(0((0%-% 8*+2-'6-%,'(0%(*("%

) " 2T

0%'+%2#(*(*#+-'#" 6-(*+*+'$*(0'(0% >63*(%-'#& M (0*#)R*+-' &% &%K 1#&,%,' '&#1#4*6-'^ %&-*1'3'*'1'*F'DGR+,' #0+' " "'^(#4*'**'4' <0 / < '.<< .'./@ '%,' #++ R' 0%'0*-(#&*+'#" +(*#10'F6#(%-' '#&*2*+"+ && (*!%'#" (0% 39 -- ,#& #+++#-6-'#" $0*10'0#(*((' ^ *9"*#(' 1#,'*** R 0 -' 4&%-%&!%,' '16&*#(*-'%>(&1(_4' ""%&'A C'*!'4'@b

(MS 0%'(& ,%#"(0% >63*(%-'(# (0%'1# -(#" +,*' +,' '&*1' +,'(0%*-"% #" %:"#+'*-'16&*#6-":'&%4&%-%+(%,'9:' #-3 -' +,*1#4"%+-(%-'^ #492& 49' 0&*-(* +' 3'**'4' < ' < < ' .GJ 3' >*']:'<< '&&*R' _'$%:'0 ,'3#-(#" (0% 1 &&:*+2' (& ,%9%($%%+'(0% 34*&% +,' +,*b

G' F,#"40' *-('%(#33%+('" (0*#4'+**'1'<

6+ 0% 6(0#& 0 -' 3*-(8%+'(0% 116- (*!% 76+ +'^ #!! !R'#& (0% +#3*K + (*!% 706' +! -*-'(0% + 3%' 4' 44%+,*>' @b

(CG' 0%'1*(:'#'' %2& '#& 2T& +'*+' %3%+'*-'-6&&,6+,%,' $*(0'4,"+'('%% '5+,'-(+,-'*+'(0% 0d0 &# ,'9%($%%+' +'(0% 1 4*(" +,' %11 ''&#3'(0% '#&3%& (%+''&#3'(0%" ((%&($%+(:', :-" #6&+%:'#" M (& ! +'#"1 3%"-'^ 06"'%, '7%-1&*4(' & (+-%'4'/DR

?8=8G ; :ſ E% ?ſ ?;ſ $ 8E=ſ 8>ſ >C :8 #1ŀŤ ?;ſ $?G $?;9ſ 8>ſ
<F%<ſ % @ 8 ;:ſ ?;ſ 8 ;$ %8Fſ 8>ſ ?;ſ FC99%=%<=ſ 8=< $?ſ
?;# ;BG9ſ @<99;:ſ I%#ſ ;:ſ b;<ſ E% ?ſ <ſ> ;;ſ <=:ſ< Cſ :;@ %A;:ſ
?;ſ W;E%9?ſ@ 89; C ;ſ 8>ſ?%9ſ H%=B:8 ſ <=:ſ %>;ſ <=:ſ ;M %=BG%9?;:ſ
<ſ <$;ſ 8>ſ@ %=$;9ſ E?8ſ ?<:ſ G ;:ſ<F8A;ſ E8ſ ?8G9<=:ſC;< 9ſ ?;ſ
;JG;9 ; ;:ſ ;B%8=ſ8>ſ C ?ſ<=:ſ> <=H%=$;=9;ſ ?;ſ$8=JG; 8ſ
% ;:%< ; Cſ <==8G=$;:ſ ?;ſ A%$ 8 Cſ 8>ſ ?;ſ B89@;ſ ;JG;9 ;:ſ<=ſ
8 ?8:8Mſ@< %< $?ſ<=:ſ 98ſ E< Cſ@ 8>;99;:ſ ?%9ſ > %;=:9?%@ſ 8ſ
?;ſ 8 <=ſ ; @% ;ſ ?<ſ WG9 %=%<=ſE<9ſ >< ;=;:ſ FCſ ?;ſ ?8@;ſ8>ſ
:%A; %=Bſ ?;ſ 9% Hſ <:;ſ ? 8GB?ſ ?;ſ$?<==;ſ 8>ſ FC99%=%<ſ <=:ſ
8>ſ;M$% %=Bſ ?;ſ>8 $;9ſ8>ſ <F%<ſ<B<%=9ſ ?;ſ ; 9%<=ſH%=Bſ 8=)ſ
=89G9ſ :;9$;=:;:ſ>8 ſ><ſ >< % Cſ8>ſ< F<99<:8 9ſ E<9ſ=< ;:ſ FCſ
?;ſ ; @; 8ſ 8ſ;M;$G ;ſ ?%9ſ % @8 <= ſ $8 %99%8=ſ ;ſ E%9; Cſ
:;$ %=;:ſ ?;ſ 9?8 ; ſ FG ſ 8 ;ſ :<=B; 8G9ſ 8<:ſ ? 8GB?ſ ?;ſ
9<=:Cſ :;9; 9ſ8>ſ GF%<ſ0 <9$;=:;:ſ ?;ſ % ;ſ ; F< H;:ſ 8=ſ F;ſ
;:ſ ;<ſ<=:ſ9<>; Cſ <=:;:ſ< ?;ſ > %$<=ſ@8 ſ8>ſ :G %9ſ 8 ſ
:G %9ſ 8ſ ?;ſ 8C<ſ$% Cſ8>ſ MG ;ſ%9=8ſ 8 ;ſ ?<=ſ>%> Cſ ;<BG;9ſ
%=ſ<ſ :% ;$ſ %=;0 FG ſ ?;ſ E%=:%=Bſ@<99;9ſ8>ſ ?;ſ 8G= <%=9ſ :;N
<%=;:ſ ?;ſ< F<99<:8ſ>%> ;;=ſ :<C9ſ0 <=:ſ<9ſ ?;ſ <A; 9;:ſ ?;ſ
>8 ;9 9ſ ?;ſ 9<Eſ <=:ſ A<BG; Cſ $8 @G ;:ſ<F8G ſ>%A;ſ ?8G9<=:ſ
% :ſ ; ;@?<= 9ſ ?;ſ$<@% < ſ<$$8 :%=Bſ 8ſ?%9ſ ;@8 ſE<9ſ< B;ſ
<=:ſ @8@G 8G90 <=:ſ ?;ſ ' ſ8>ſ MG ;ſ%9ſ 9 % ſ $8=9@%$G8G9ſ
FCſ ?;ſ ;B<ſ$8 8=<%8=9ſFCſ ?;ſ G%=9ſ8>ſ<ſ ? %9 %<=ſ ; @ ;ſ
<=:ſ FCſ 9%M ;;=ſ 8ſ 9;A;= ;;=ſ 8F; %9H9ſ %=9$ %F;:ſ E% ?ſ 6 ;$%<=ſ
$?< <$; 9 fſ G ſ ?;ſ ;BG9ſ B<A;ſ<G:%;=$;ſ%=ſ ?;ſ 8@;=ſ>%; :ſ
9;< ;:ſ 8=ſ<ſ 8> Cſ $?< %8 ſ E?%$?ſ E<9ſ : <E=ſ FCſ >8G ſ ; ;@?<= 9ſ
9G@; F Cſ $<@< %98=;:ſ<=:ſ 9 8G=:;:ſ FCſ ?%9ſ =8F ;9ſ <=:ſ GN
9%$%<=9ſ ;ſ E<9ſ $<:ſ %=ſ<ſ %=;=ſ B< ;=ſ <=:ſ $<@ſ ?8 :%=Bſ %=ſ
%9ſ ?<=:ſ E8ſI<A; %=9ſ<=:ſ<ſ %B? ſ9?%; :0<=:ſ<ſ %8GB?ſ?%9ſ=<H;:N
=;99ſ E<9ſ % @; >;$ Cſ$8A; ;:ſ ?;ſ :%9@ <C;:ſ ?;ſ < F< %$ @8 @ſ
8>ſB8 :ſ$?<%=9ſ$8 < 9ſ<=:ſF <$; ; 9ſ %$? Cſ<:8 =;:ſE% ?ſ@;<ſ 9ſ
<=:ſ@ ;$%8G9ſ 9 8=;9ſ ?;ſ< F<9# :8ſ8>ſ WG9 %=%<=ſ H= ; 0 ?;ſ
;BG9ſ <%9;:ſ?% ſ> 8 ſ ?;ſB 8G=:ſ ; F <$;:ſ 8==89G9ſ H%99;:ſ
?;ſ9;< ſ@; G9;:ſ ?;ſ ; ; ſ<$$;@ ;:ſ ?;ſ 8 <=ſ< %<=$;ſ<=:

34ſ 0%ſ 3 &(:&,#3ſ#"ſ (ſ &%(0 -ſ4&*+1%#"ſ %2& ſ +,ſ0*-ſ(0&%% 06+,&%,ſ +,ſ
'#&(:ſ1#34 +*#+-ſ*-ſ %39%""*-0%,ſ *+ſ (0% "%2%+,-ſ#"ſ %(40& -(%-ſ +)ſ *1%40#&(-ſ
""*-(6-ſ 1#4*%,ſ 9:ſ &#+*6-ſ ' /D<ſ #ſ DD J 7ſ /D<ſ #ſ D R' S2
&%'6(%,ſ $*(0#9-16&% ,*"*2%+1%ſ9:ſ -+ 2,ſ^ *-(ſ,& ſ"6*'-ſ (#3ſ>6ſ3ſ !***ſ1ſE
4ſ <<< <. R' $0# *+!%-(*2 (%-ſ(0,ſ-((#"(0% %$-ſ*+ſ & 9* ſ +,ſ (0*#4* ſ _\"ſ
1(ſ 1(ſ 1(ſ ſ4ſ@D ſ L 2 4ſ 0%440 +%-ſ 0&#+ ſ ſ -43'\

334 "! &%[ſ^*+ſ 36-*#ſ (#3ſ*ſ '#"ſ D ſ!%&-ſR - $ſ (0% "*#(&*-9*(=
-((% #"ſ >63%*+ſ (0% :% & c/DGW"6#2# $#"(# 964+# %2& +,%ſ)(ſ $ - &6*+%6
+ſ (0% - 3%1%+(6&:ſ9:ſ(0% "(&",-0+! -*#+ſ #3#&% (0 +ſ#+%06+,&%,ſ0#6-%-ſ
&%3 *+ſ96((0,ſ3%3#&:ſ#"ſ*(-ſ4 -(2&% (+%-ſ*-ſ 4&%-%&!%,ſ9:ſ(0% (5-*"ſ1#&#+ K
(*#+ſ" 6,#"48 *-(ſ%(# 436*% (ſ3ſ*(ſ "R

F <= : %9?%=Bſ ?%9ſ E ; <@8=9ſ : ; =@G=$; :ſ % \#H% <? ;ſ E<ſ <B<%=9ſ ?;ſ
E8 9?%@@; 9ſ 8>ſ >% ;ſ G ſ ?;ſ @ 8@89<ſ 8>ſ ?;ſ b% H <: ;ſ E<9ſ
; G : ; :ſ " <=:ſ =8 E% ?9 <= : %=Bſ ?;ſ <99 # = $; 9ſ <=:ſ @; ?<@9ſ ?;ſ
E%9?;9ſ 8>ſ ?;ſ FC99%=%<=9ſ ?;9;ſ ?89 % ;ſ ;=<$;9ſ ;A<@8 < ; :ſ
E% ?8G ſ ;>>;$ ſ ?;ſ 8 ; % ;9ſ E ; ;ſ G=E% %=Bſ 8ſ <F<=:8=0ſ
?;% ſ < 8 < %$ſ B 8A;9ſ 8ſ ;M@ 8 ;ſ <ſ 9<= : Cſ : ;9; ſ <= :ſ 8ſ ; =N
$8G= ; ſ <> ; ſ < ſ ?;% ſ >< %BG;9ſ <ſ >8 %: <F ;ſ =< %8=ſ > = ſ E?8 ſ
ſ ?;Cſ ?<:ſ =;A; ſ ;$;%A; :ſ <=Cſ @; 98=<ſ %=IG %;9ſ =9 ;<:ſ 8>ſ
; = < B%=Bſ ?%9ſ $8=JG;9 9ſ ?;ſ H%=Bſ 8>ſ ?%8@%<ſ E<9ſ %=$<@<F ;ſ 8>ſ
: ; >; = : %=Bſ ?%9ſ @899;99%8=9ſ F <?<?ſ ?;ſ 9 <A;ſ 8>ſ <ſ 8 <=ſ
ſ ; $?<= ſ 8>ſ : G %9ſ <99G ; :ſ ?;ſ 9$;@ ;ſ 8>ſ ?;ſ 8 ; % ;9 0ſ
?;ſ 88@9ſ 8>ſ > %$<ſ E ; ;ſ 9; : G$; :ſ FCſ ?;ſ GMG Cſ 8>ſ ?;ſ $ % < ; 0
<= :ſ WG9 %=%<=ſ 98 %$% ; :ſ ?;ſ > %; = : 9?%@ſ 8>ſ ?;ſ G9G @; ſ E?8ſ
?8=8G ; : ſ E% ?ſ <ſ 9 %B? ſ %FG ; ſ ?;ſ 9G@ ; <$Cſ 8>ſ @%9ſ @ %=$;
> ; ſ <ſ 8=Bſ 9; %;9ſ 8>ſ @ 89@; % Cſ ;ſ @8E ; ſ 8>ſ F <?<?ſ E<9ſ
8A; ? 8E=ſ F ;>8 ;ſ ?;ſ B< ;9ſ 8>ſ ;$$<0ſ ?%9ſ $?% : ;=ſ E ; ;ſ : ; N
9@8% ; :ſ FCſ ?;ſ ; 9%<=ſ $8=JG; 8 0ſ <=:ſ ?;ſ I ?%8@%<=9ſ E ; ;ſ 1T0
:=< Cſ ; M@; ; :ſ > 8 ſ ?;ſ $8= %=; = ſ 8>ſ 9%<ſ ?%9ſ =< < %A;ſ 8>ſ #
8F9$G ;ſ <=:ſ ; 8 ;ſ ; A; = 9ſ %9ſ =8 ſ >8 ;%B=ſ 8ſ ?;ſ : ; $ %=;ſ <=:ſ
><ſ 8>ſ ?;ſ 8 <=ſ ; @% ;ſ >ſ <ſ ? %9 %<=ſ @8E ; ſ ?<:ſ F ; ; =ſ
<%= <%=; :ſ %=ſ <F%<ſ <?8 ; ſ G9ſ ?<A;ſ F ; ; =ſ $ G9?; :ſ %=ſ ?%9ſ
$ <: ; ſ <=:ſ FC99%=%<ſ E8G :ſ ?<A;ſ @ ; A; = ; :ſ <ſ ; A8 G %8=ſ E?%$?ſ
?<9ſ $?<=B; :ſ ?;ſ $%A%ſ <=:ſ ; %B%8G9ſ 9 < ;ſ 8>ſ ?;ſ E8 :

"** O%ſ &%!#"6(*#+-ſ #"ſ %3%+ſ *+ſ (0% -*>(0ſ 1%+(6&:ſ 36-(ſ 9% 1#""%1(%,ſ '&#3ſ
&#1#4*6-ſ ^ %&-*1 ſ 3ſ *ſ 1ſ ſ DGRſ 0%#40 +%-ſ :[+(ſ ^ 46, ſ 0#(ſ 1#, ſ >***ſ 4#ſ
GRſ (ſ 0%#40 +%-ſ ^*+ſ 0&#+#2& 40ſ 4ſ . . ſ . / ſ ſ ſ DG ſ DG@ſ $0# *-ſ '6"#
#"ſ -(& +2% 9"6+, %&-ſ @ ſ > &$ G</ſ G .bRſ #1#18ſ ^ 4%1*3%+ſ *-(ſ & 9ſ
4ſ Dſ /Rſ ,T %&9%"#(^ *9")#(ſ &*%+("%ſ 4ſ Dſ .@@Rſ +, "%T-ſ &%"*3*+ &:ſ
7*-1#6&-% +,ſ =#& +ſ ^1ſ G/Rſ 0% &%1#"(#"ſ 9& 0 0ſ *-ſ 3%+(*#+%,ſ 9:ſ &#1#4*6-J
+,ſ 0*-ſ ' "" ſ (0#620ſ 1"#6, %,ſ $*(0ſ 3*& 1"%-ſ *-ſ +ſ 0*-(#&*1 " ' 1(ſ _ %% '6&(O%&
44%+, *>ſ @ b

'))

@

$8G= C <9 <@%: C 9%=H% %B %= 8 ?; 9 < ; 8> F< F< %9
*4 0> 8 E ?;=$8 % ?<: F; ;= <%9; : FC ?; ?$;=%$%<= $8 8=%;9 <=:
8 <= <E9 I <=: ;A; C 9 ;@ 8> %= ;9 %=; :%9$8 : E<9 < H; : FC
98 ; : ;@ 8 <F ; A%$ 8 C 8> 9<A<B; <= 8A; $%A% %L; : 98$%; C
?; 88 9 T ?8GB? %B=8 <= 8> IG9 %$; E ; % @< %;= 8>
8@@ ;99%8= ?;% A<B <= %>; <=: F8G=: ;99 E% : ; =;99 :%9<@N
@8%= ; : ?; < 9 <=: ; G: ; : ?; $?<%=9 8> < $8=JG; 8 <=:
;M@; %;=$; ?<: 9?;E= ?< =;% ?; 8< ?9 =8 8F %B< %8=9 $8G :
9;$G ; ?; >%: ; % C 8> ?;% < <$? ;= ?; A%$ 8 C 8> 8G=
G <9 ?<: <E; : ?; %= 8 8 ;= < C 9GF %99%8=4 FG %> ?;C
;9@;$; : ?; $?< <$; 8> 8 8 8= ?;C ?< ; : <=: : ;9@%9; :
?; @ %: ; <=: GMG C 8> ?%9 E8 =;@?;E9 C G9 <=: ; B%G9 8=
E?8 ?;% G=$; ?<: % @ G: ;= C F;9 8E; : ?; @ 8A%=$%<
B8A; = ;= 9 8> %@8 % <=: ;= <@8 %9 88 %9? %F; ;=N
$< @; : G=: ; ?; E< 9 8> ;@ %9 8 ;=; E ?;% < %<=$; <=:
;$; %A; > 8 ?; B8A; =8 ?; $G9 8 < C B%> 9 8G 9$8 ; 8>
?;% : ;@G %; 9 E ; %= 8: G$; : <9 > %; =: 9 %= 8 ?; $% C FG 8=
?; : < H 9G9@%$%8= 8> < $8=9@% <$C ?; C E; <99<$; : < ?;
<F ; 8> ; B%G9 <=: ?; $ < 8G 8> < 9 <=: ;A; =B; E<9 ;N
;$?8; : ? 8GB? ?; A< ;C9 8> 8G= <9 > 8 F8 ? ?;
C ;9 8 ?; <= %$ 8$; <= ; @; 98=< %=IG C ?; G=IG9
, ;M; $G %8= 8 G : ; 8>?%9 F 8 ?; ; =: ; ; : = < <9 ?; ; =; C
8> ?; 8 <=9 T ?; : ;>; < 8> ?; <=: < 9 ?<: >8 ; C
%B=< %L; : ?%9 A< 8G ?; : ;>: % ;= 9 8> IG9 %$; <=: @ G: ; =$;
E ;%; 9 % 8 ; $8=9@%$G8G9 %= < 88 <=: E?% ; ?; <%:
: G ; G %=<9?;9 ?; $< C <: 8=%9?; : ?; ; @; 8 ?<
?; @; <$; 8> > %$< %B? F; 9; $G ; : FC ?; ;$< 8> 8 8 8=
<=: ?%9 G=E8 ?C =; @?; E9 ?; ; M< $? ; : >8 ? ?%9 88@9
> 8 < ?<B; FG < ?; : %9 <=$; 8> 9%M : <C9 I8G =; C %= ?;
=; %B?F8G ?88 : 8> ;F; 9 ; T ?; E<9 <9 8=%9?; : FC ?; 9G@; %8

5 0% ##&*-0 $ &- &% #11 -*#+ "": *+(&#, 61% *+(# (0% + && (*!% # &%#1#4*6-
^ +, " 3 **1 D< D/ D@ D J C#(0*1 3 *! 1 @RJ +, 0%#40 +%- , ,-
-#3% 4&#-4%&#6- +, ,!%&-% %!%+(- *+ (0% " -(: % &- # 6-(*+* +

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? /. ^+#(/.< - *1(#& #++ -((%-R 0*-0 - 9%%+ 4&#!%, 9 : &(-10 &###%3
4 >!** >!** 0% 4" 26% $ - & 2*+2 *+ (0% #3 + 4&#!*+1%- #" '&*1 * *+ / .< + ,
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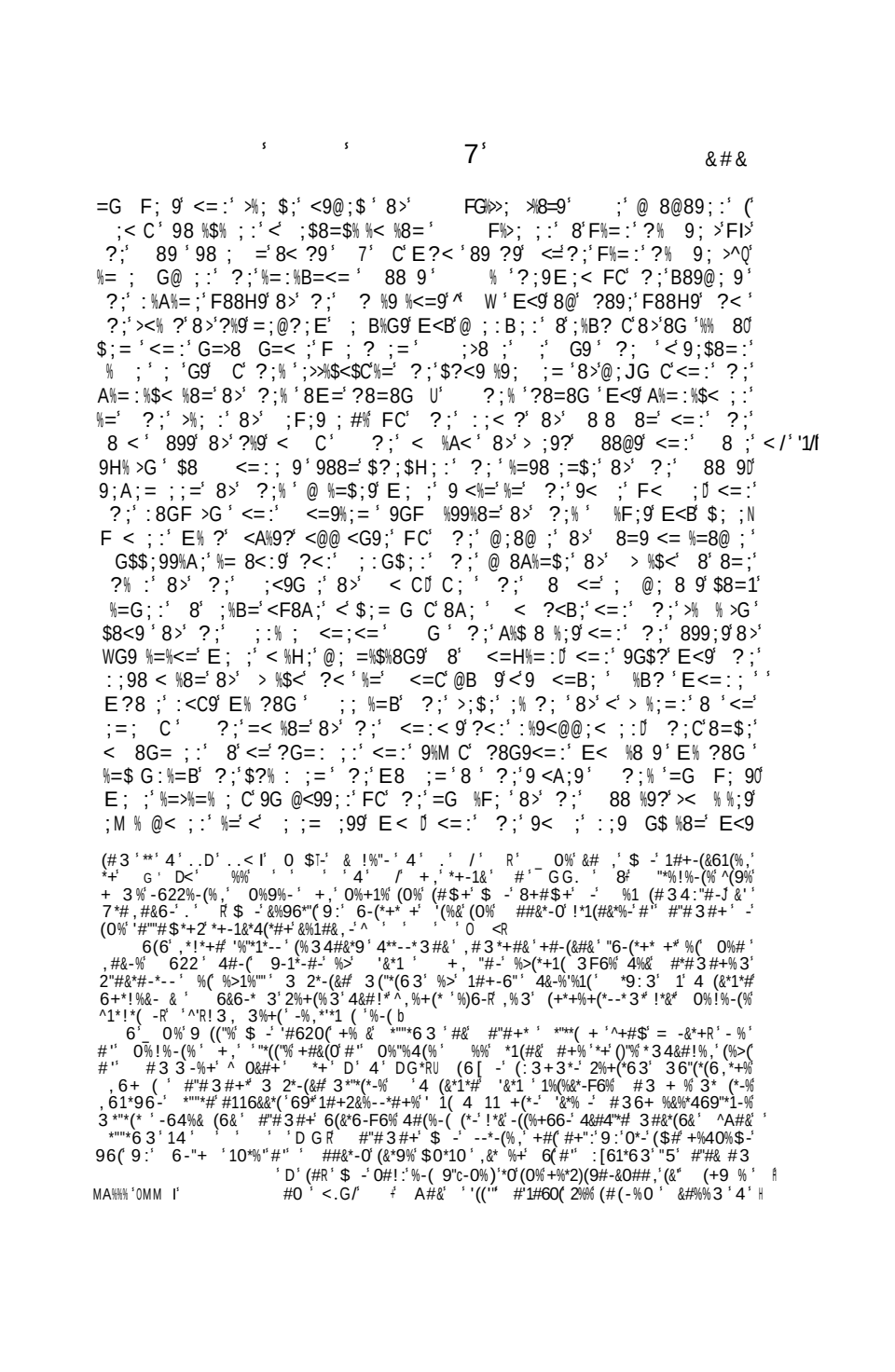
(&*9% $0#-% ,%46(*%-$%&% 36&,%&%, $%&% (0% 26 +(+^0*-*-#+%# "(0% +6 3%&#6-
'#&3 - #" (0% + 3% 6-%, 9 : #&*446-R o ! , *'#" &#1#4*6- b

#$ *9%-0 *+ (0% 8*+2, #3 #" "2*%&- (*- $ (%&%, 9 : '&*!%& (0% 6)%& --
$0*10 ' ""-* +(# (0% %)%&, V, H *9%-0 *-(*"" &%3 &8 9"% '#& *(- $ ""-#"
" &2% -(#+%-5^"*8% (0% #"*-%6 3 #" #3%R ' '#6+(*+ +, 2&#!%# " $ 0*6(0(&%%-0
(0% 1#6+(&: *- '&6*('6" 0+, (0% +%*209#6'*+2 %&%9%&%- &% $ &"*8% (44% &-
'&#3 +* +-1&*4(*#+ (0 (' 6+, %& (0% &%*2+ #" , &* + (0% &# , &#3 &(0 2% (#
%9%-(% -1#+-(&61(%, 9 : (0% (0*&, "%2*#+ ^ &3 #" 7%-1&*4(*#+ , # '&*F6%



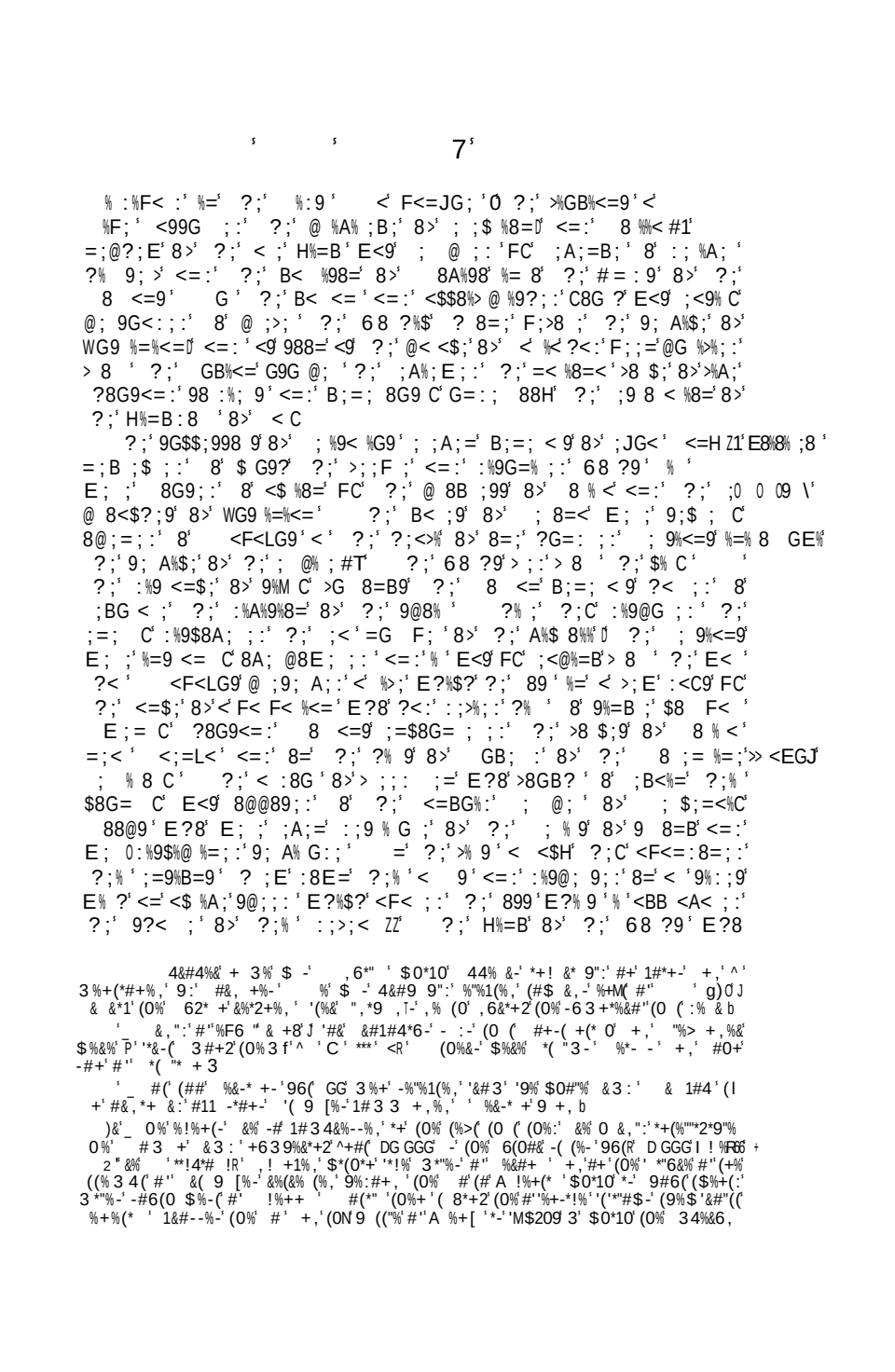
; < %9%; : ? ; 8 % 89 <= : ? # E ? 8 @ ; %9 ? ; : FC ? ; $ % < ; ? ; % G G< JG< ; 9 <= : ? ; <B; 8> ? ; < F< %<=9 ? ; = 8$8@%G9 >%>9 <= : ; : ? ; < : =%% ; : ? ; @8@G 8G9=; 99 8> ? ; $% %; 9 <=: $8G= C b ;1%G8 9 C ; M; %>$%9; : %T ? ; <F8G 9 8> $8 ; $; <=: <B %$G G ; = ;99 ?<= E ; = C C ; < 9 ?< FG9C 9$; = ; E<9 $8=A; ; : %= 8 < 9% ; = 98 % G : ; ? ; E ; < ?C $% %L ; =9 ; 9$<@; : 8 %$% C <=: 8=9 <= %=8@ ; <=: ? ; 9; $; ?%9 8 %<= ?<9 $8=>%: ; = C <>% ; : ?< >%A; % %8=9 8> > %$<=9 ; ; $8=9G ; : FC ? ; E< 9 <=: B8A; = ; = 8> ? ; ; @; 8 WG9 %=%<= 3#

8?% ? ; I; < 8G9C 8> ? ; CL<= %=; $8G ?< : =8 @ ; % ; : ; %9< %G9 8 <$?%; A; ? ; $8=JG; 9 8> < C <=: ?%9 <F G@ : ; @< G ; ; A%A; : ? ; $8G <B; 8> ? ; 6 8 ?9 E ?8 ; 9@; $; : ?%9 B; =%G9 ?%9 A% G; <=: ; A; = ? ; <G: <F ; 8 %A; E ?%$?' ?<: G B; : ? ; 9; A<= 8> WG9 %=%<= 8 : ; $; %A; <=: ; I; $? ; ? ; C ?<: 89 ? ; % H%=B R<= %=$8=9%: ; <F ; 899S ? ; % $<@% < ? ; % ; <9G ; 9 ? ; @ 8A%=$; 9 > 8 %$% C 8 ? ; @9 <=: ? ; % % < C >8 $; > E8 ?G=: ; : ?8G9<=: < F< %<=9 <B=%>%N $; = C ; JG%@@; : E% ?' ?8 9; 9 <=: < 9 ; < E<9 =8 89 <9 8=B <9 <A%< E<9 : ; >; = : ; : FC 8=; ?8G9<=: 6 8 ?9 %=9@% ; : FC < 9; =9; 8> ?8=8G ?; 8A; 8> ; ; : 8 <=: ?# ; 8 C 8> ?; % @<9 B ; < =; 99 ?; 9G@ ; ; $8 <=: E<9 G=<=% 8G9 C 8>>; ; : 8 ?; F <A; <%<9 <=: % E<9 %= ?%9 ; C; 9 < 8=; ?< ?; : %9B <$; 8> ?%9 G=$; % %B; 9 $@G : <@@; < ; <9 < ; <98=; 8>

8:% :% ; M$ G9%8= %9 A8%$; %=$ %=; : ?; > ; $ %8= %= ><A8G 8> % : %0 F< : E ?89; @; 98=< ; % E<9 ; $8 ; = : ; FC ?; A<%= ?8@; ?< ?%9 H%=9 <= ?; G: ; 9 ?; @<=%9?' 8=< $? E8G : 9G@@8 ?; $8 8= %= ; ; 9 8> ?; 6 8 ?%$=< %8= ?; 9G$$; 99 8> ?%9 < 9 %= %BG %< <=: ; =; %< 9; ; : 8 IG9 %>C ?; % $?8%$; FG ?; 988= : ; $ < ; : 8 ?; E8 : ?< ? ; E<9 %=$<@<F ; 8> >8 B%A%=B $8 =<<=: %GB ?%9 F; =; >< $ 8 ?; $8=98 8> % : %0 F< : E<9 : ; ; @ C E8G=: ; : FC ?; F; <G C ?; %$?; 9 <=: ?; @ %: ; 8> ?; E%>; 8> <%<9 <=: ?; : ; < ?' 8> ?< % G8G9 @< %8 ; M$% ; : ?; %=: B=< %8= 8> < > ; ; @; 8@ ; F8 : <99<99%= ; M; $G ; : ?; % 9; = ; =$; FC 9 %H%=B 8> ?; ?; <: 8>

%5 &#1#4*6- x +%1, #(' 1' * ' 0%' -%&%-' #" (0% '&*1 +' 0*-(#&:' ((%-(-' (0*-' 0&%" +10#":' (&6(0' 0

0 +' (0% -%1#+, ' ^1' <GR +, ' (0*&, ' 9##8-' ^1' (.GR' &#1#4*6-' 1#+(*+6%-' (0% 0*-(#&:' #" (0% C#(0*1' $ &' '&# 3' (0% '*' (0' (#' (0% '*' (%%+(0' :% &' #" 6-(*+* + _ '%)%' : % &' *(0% $ &) ' -' (0% %!%+(-' &% "%--'*+(%&%-(*+2' (06S' *I' (0% '#& 3 %&' 4%&*#, ' 0% ""#(-' +":' 0 "' (0% -4 1% (#' ,#69"% (0% (*3 % #3 +, %-' +, ' (0% 0&#+*1"%' #" &1%""*+6- ' #&, ' -#3 % 1#"" (%& " 0*+(-' *2#+*6-' &*' 6& (#&*' -1#6' +, ' 7 % (%"(' &% 6-%'6" ' +, ' 0 !% 9%%+' 6-%, ' _ 0% -4 1% ""#((%, ' 9:' &#1#4*6-' (#' (0% ! &*#6-%!%+(-' , %4%+, -'#+' 0*-' 4&%-%+1% (' #& 9-%+1% '&#3 ' (9S 1%+% #" $ & ' 4 ' 6&: ' &#' ##4* + ' *' 4 '



F G9?; :' >8>' ?;' F<9;=;99' 8>' ?%9' ;=; %;9 ' @G 9G; :' E% ?' <@%:' 9 ;@9' ?;' @< ?' 8>' ?8=8G ' <=:' A%$ 8 C' 8 % <' @<99; :' ?;' 8 ' <A; 9; :' ?;' @; 8=%=; ' 9G9@; =: ; :' ?;' % @8 <= ' $8=JG;9 ' 8>' <A;==<' 8 ;=$; ' <=:' 8 ; ' <=:' < $?; :' ? 8GB?' ?;' ?;< ' 8>' < C' 8' >8 =% ?;' 9%; B; ' 8 ' < ?; ' F 8$H<); ' 8>' <@ ;9' ?;' 8 <=' $?%;>9 ' % @ %98=; :' %=' ?;% ' ;9@; $ %A;' $% %;9' <=:' <$$G9%=B' ;<$?' 8 ?; ' 8>' ?;' $8 8=' :%9B <$; ' :%:' =8 ' @ ;9G ;' 8' :%9 G F' ?%9' ;= ; @ %9; ' G ' ?;' ; @; 8 ' < < ; :' FC' ?;' :%9 ;99' <=:' :<=B; ' 8>' ?%9' < %<=' $8=JG;9 9 ' :%9@< $?; :' 8' ?;' ; %;>' 8>' <@ ;9' <' > ; ; ' 8>'B< ;C9' <=:' <' F8:C' 8>' ? <$%<=' <=:' ;=%<:' 98 :%; 9' ?;C' <=:;:' %=' %$% C' E?%$?' C%; :;:' % 9' $8@%8G9' 9 8 ;9' 8>' @ 8A%9%8=9' D FG ' ?;' :; <C9' 8>' ?;' =;E' $8 <=:; ' <=' G=E< %H;' <B%9 < ; ' @ 8 <$;:' ?;' 9G>>; %=B9' 8>' ?;' F;9%;B;:D <=:' ?;' 9G$$8G 9' E?%$?' ?;' : 8@ ' E% ?' <' % %:' <=:' < :C' F<=: ' E; ;' 9G$$;99%A; C' %= ; $;@ ;:' FC' ?;' < ;:' A;99; 9' 9 < %8=;:' FC' 8 % <' %=' ?;' F<C' 8>' <@ ;9' ?;' @ %=$%@<' 8>%$; ' 8>' ?;' 8 <=9' E<9' :<BB;:' E% ?' <' 8@;' 8G=:' ?%9' =;$H' 8' ?;' >88 ' 8>' ?;' E< ' > 8 ' E?;=$; ' E% ?' <' ; F %=B' A8%$; ' ?;' ;M?8 ;:' ?;' $% %L;=9' 8' % @ 8 ; ' %H;' ?% 9; >' ?;' ; $C' 8>' ?;' $8=JG; 8 ' ?;C' ;JG;9 ;:' <' G$; ' E% ?' <' @ 8 %9;' 8>' 9G ;=:; N %=B' ?;' $% C' %>' =8' ;>>;$ G<' ; %;>' 9?8G :' <@@;' <' ?;' %=:' 8>' ?% C' :<C9' =9 ;<:' 8>' 8E;' 8= ?' ?;' <G:<$%8G9' < F< %<=' B <= ;:' ?; ' % ;' %=' ?;' IG9 ' $8=>%:;=$;' ?< ' >< %=;' E8G :' <= %$%@<;' ?;' ; ' 8>' ?;% ' $<@% G < %8=' > ; ' ?;' ;:G$ %8=' 8>' <@ ;9' <=:' G <;' ?;' @ 8A%=$;9' 8>' G$<=%<' @G %<' <=:' < <F %<' 9GF % ;:' 8' ?;' H%=B' 8>' ?;' 68 ?9' 8 % <' ;:' ?%9' < C' 8' ?;' B< ;9' 8>' 8 ;' @% $?;:' ?%9' $< @' < ' %FG ' 8 ' %A8 %' E% ?%=' E;= C' % ;9' 8>' ?;' $<@% < ' <=:' $< C';M?8 ;:' ?;' 9;=< ;' <=:' @;8@ ;' 8' $8 @< ;' ?;' C <==C' 8>' ?;' 6 ;;H9' E% ?' ?;' F ;99%=B9' 8>' ?;' 68 ?%$' ;%B=

= $E ?;' <@%:' 9G$$;99' 8>' 8 % <' <C' F;' @< C' <9$ %F;:' 8' ?;'
K' ;A8 G %8=' E?%$?' ? ;;' C;< 9' ;M@; %;=$;' ?<:' @ 8:G$;:' %=' ?;'
A% G; 9;= % ;= 9' 8>' ?;' < %<=9' ' ?;' $8 <=:' 8 ' < ' ;<9 '%=' ?;'
=< ;' 8>'<' $< ?8 %$' ; @; 8 ' ?;' @8@; #T' ?;' 9@% % G< ><?;

*-(-' &% &#6(%,' +,' &(9 [%-'-" *+'*+'-*+2"%' 1#39 (' $*(0' *"' &*-' 0%' #3 +-' 0 !*+2' -6'*%&%,' '-%!%&%' "#--'&%(&% ('(# !%++ ' +,' #(*" ' ,! +1%-'*+(#' 6-1 +:' 9%-*%2%-' A"#&%+1% ^$0*%0' *-' 0%","9:' 6-(*+R' +,' ,%'% (-'*+' (0%' ! "%:' #'' 62%"'#^ ', :!-')#6&+%:''&#3' A"#&%+1%R' (0%' &3:'#'' &%"*%" $0*10' 0 -'1#3%' '&#3' !%++' 6+,%&' #0+' +,' %-- -' 0%' #,% 62% #2 !%' 1%+(& " +,'-#6(0%&+' (":' (#'(0%' C#(0-' ('$ -'*'#620((# (6,-'%+,'#'' / .D' &#1#4*6-' 'C' ***' < /

:"!%&*6-'9*-0#4'#'' #3%' $ -'''*&-((& +-4#&(%,'(# (& '*+' :1* ' +,' ("%+2(0' -(&!%,'^-69' %4&63' 16-(#,* '*+%,*'1#+'%1(6-R'*+' (0%' *-"%' #'' "3 &* ' 7' /< ' 6+% DG_4&#9 9":' :'D J' 14' "*+(#+' ' ' ' ++ b' ^ *9%& ('*+' &%!* &' 1' DD' + -(-* -'*+' :"!%&*#' &#+*6-' 7' /.G' #' 2' <' 2*' *+' *(' #+(

:' F; ;=' 8 ' > 8 ' ?;' ==G ' <=:' ;% ?; ' / . A; :' E G : ; ; :' 8=' <' : ;98 < ;' %9 <=: '#' A G;9' ;>' ; %9< %G9' E ; ; ;@ <$; :' FC' ?;' A< %8G9' 8 ' G=⇛$ =' A%; ;9' 8>' ; ;A;=' $?%; [' < ' 8 ;' <A;==<' 8 ;=$;' ; GB%<' @# = ' (; ' E ' <FG9; :' ?;%' <G ?8 % C' >8 ' ?;' %=: G B;=$;' 8>' G9 ' 8 ' <A< %$;' ?;' % N @ 8A; ;= ' 8>' ?;' ;A;=G;' E<9' $8 % ; :' 8' ;M<=: ; ' <' 9GF ;' 9$ %F; ' 8=B' @ <$ %9; :' %=' ?;' > <G :' <=: ' 8@@ ;99%8=' 8>' ?;' C9<=0' ' %=;' 9$?88 9' 0 <=:' E?89;' =< ;' 8>' ' ?;' @.2E<9' : <E=' > 8 ' ?;' : ;M ; 8G9' < %>%$;' % ?' E?%$?' ?;' ; :G$; :' ?;' 9%L; ' E% ?8G ' : ;><$%=B' ?;' >%BG ; ' 8>' ?;' B8 :' $8%=' =9 ;<: ' ;M@;$ %=B' ?;' ;9 8 < %8=' 8>' @ ;<$;' <=: ' %=: G9 C' ?;' % @89; :' 8' ?;<AC' <99;99 ;= ' 8=' ?;' >8 G=;9' 8>' ?;' %<=9 ' ; ' >%9' @ ;9;= ' 8 ' >G G ;' : ; <=: 9' E ; ;' ;99' 8:%8 9' ?<=' <' @ 9;$ 8' 8>' < F% < C' %B8G ' <B<%=9 ' ?;' @; 98=9' <=: ' @ 8@; C' 8>' < ' ?89;' E?8 ' G=: ; ' ?;' 68 ?%$' H%=B9 ' ?<: ' F; ;=' $8=$; =; :' %=' ?;' ;$;%@ ' <=: ' ;M@;=: % G ;' 8>' ?;' @GF %$' 8=;C ' ?;' 9GFI;$ 9' ' WG9 %=%<=' E?8' ;9$<@; :' ?;9;' @< %' ' A;M< %8=9' E ; ;' 8@@ ;99; :' ?C' ?;' % ;BG < ' <%= ;=<=$;' 8>' ?;' 98 :%; 9' E?8 ' ;M<=: ; ' : ;1' > <G: ; :' <=: ' : ;9@%9; :' 0 <=:' ?;%' ?<9 C' 9< %;9' %=' JG;9' 8>' E ;< ?' 8 ' 9GF9%9 ;=$;' @ 8A8H; :' ?;' %=?<F% <= 9' 8>' ?;' $8G= C' 8' <E<%' 8 ' % @ 8 ;' ?;%' : ; %A; <=$;' >%8 ' ?;' A% G;9' 8>' <' < N F< %<=' 8 % <' E<9' $?<9 ;' <=:' ; @; < ;0 <=:' =8=;' E ; ;' : ;$;%A; : ' ;% ?; ' > %;=: 9' 8 ' ;=; %;9' E?8' : ;@;=: ; :' 8=' ?%9' >< ?' 8 ' ?%9' ; ; ; B ' 8' ?;' ?G9F<=: ;=' 8>' < C' ?;' 68 ?%$' H%=B' %99G; :' <' E ; $8 ;' @ 8$ < < %8=' ;=I8%=%=B' ?; ' 8' @G 9G;' ?;%' '] % @8 <= ' <F8G 9' <=:' 8' ;9' <99G ; :' ?< ' 8=' ?;' @<C ;= ' 8>' ?;' 8 :%=< C' <M;9' ?;C' 9?8G :' F;' : ;>;=: ; :' FC' ?%9' A> 8G ' <=: :%9$%@ %=;' > 8 ' ?;' %=IG %;9' 8>' E< ' ?;' 9 8=B' 8A G9' ?;' 9G$$;99%A; C' < <$H; :' 0 <=: ' <9' 988=' <9' ?;C' ?<: ' C%; : ; :' 8' ?%9' < 9' ?;' : ; 8 %9?; :' ?;' >8 %>%$< %8=9' 8' 9<A;' ?;' @; ;' ?;' $< < % %;9' 8>' < >G G ;' 9%;B; ' 8' : ;@ %A;' ?;' 8 <=9' 8>' ?;' < 9' 8>' : ;>;=$; ' <=:' 8' : ;$%: ;' ?;' : ;%8G9' JG< ;' 8>' ?;' E8

(#3 ' *' 4' D /' D R' &#1#4*6-' ^ +%1,#(' 1' *R' 116-%-' #+":' (0% %3 4&%--' +,' +(#+*+ ' *9%& (6-' +,' (0% *9%&' #+(' ^P' ' + -(-*6-f R ((&*96(%' 3' *2"'*6- (0%' &%3#! "#" *"!%&*6-'(#' "3 &* ' &#1#4*6-' ^ +%1, ' -((%-' (0 (' ?%9 $*18%,+%--' $ -' $&#620(9 :' '-%&! +(' #" +(#+*+ b (-' "3 &* ' ' -3 ""*-" +,' #44#-*(%'(#' && 1*+ ' +,' (0%1# -(' #" (0%' #"-1*' ^ "6!%&' ("' +(*F' 3 0*' '@' 4' G .R -' (0%' #2 (0%(%' "10 +,%&' +,' 3#-(' #" 0*-' *!'" +,' 3*"'((:' 1#""% 26%-' $%&%'%*(0%&' ,*-2& 1%,'#&',%-4*-%,' (0%'*+8'#" (0%' +%1,#(%-' ^1' . ' / ' H*-'-1 &1&(:' 9" 18%&'(0 +' (0 (' #" (0% C#(0*1' *-(#&:'^3 0*'1' *' <' ' ' DG')' E1 R' _ "%> +,%& &%1%*!%,' '#&' 0*3 -%"' 1#3 3*--*#+'#" #+% ($%"'(0'#+' 0*-' %>(#&(*#+-' 0%' #" '*1%' #" "#2#(0%(%'*-' '6"":' ,*-16--%,' 9:' +10%+8#' +' A6+0 ' <' 4' . :o' +0' Q 13 &#1#4*6-' ^ ' *' 1' D' ' E1 R',#%-' 3 4"%' +,' $*""*+2')6-(*1%'(#' (0%' 3 %&*(' #(*" ' 0%' #3 +' 0*-(#&85' '&#3' ""6 ' +,' 1*(6-' 7 ' 0 44:' (#' '#&2%(' (0%'!*1%-'#" '(0%*&%3*+(&: 3 5'*+' (0%' 1 +(%+FV3(*#+'#" &9 &*1'!*&(6%

=< %8%%9ʻ FCʻ ^G‰ >;JG<ʻ <= :ʻ ?8=8G <F ;ʻ $8=> %$ ʻ %=ʻ ?;ʻ >%; :ʻ 8>ʻ F< ;ʻ ?;ʻʻ 8 <=ʻ $<@ %A;9ʻ <= :ʻ :;9; ;9ʻ E; ;ʻ ; @ ;:ʻ 8ʻ ;= %9 ʻ %=ʻ ?;ʻ9; A%$;ʻ 8>ʻ <ʻ %F; <ʻ <=:ʻ $8G ;8G9ʻ <:A; 9< Cʻ ?;ʻ 9 <A;9ʻ E; ;ʻ < <$ ʻ ;:ʻ FCʻ ?;ʻ >% ʻ <=:ʻ 0>;% ?>G ʻ @ 8 %9;ʻ ?< ʻ ?;Cʻ 9?8G :ʻ=;A; ʻF;ʻ:; %A; ;:ʻ 8ʻ ?;% ʻ <9 ; 9ʻ <=:ʻ > 8 ʻ ?;ʻ ?8G9<=:ʻ E< %8 9ʻ 8>ʻ <A%<ʻ <ʻ =;Eʻ @;8@ ;ʻ G=:; ?;ʻ 9< ;ʻ <@@; < %8=ʻ 8>ʻ 68 ?9ʻ E<9ʻ %=9;=9%F Cʻ >8 ;:ʻ %=ʻ ?;ʻ $< @ʻ 8>ʻ 8 % <ʻ ;ʻ 9%=$; ; Cʻ <$$8 @ %9?;:ʻ ?;ʻ< %$;9ʻ 8>ʻ $<@% G < %8=ʻ E% ?8G ʻ 9;;H%=Bʻ 8 ʻ <$$;@ %=Bʻ <=Cʻ 9%=%9 ; ʻ <:A<= <B;ʻ > 8 ʻ < F%BG8G9ʻ ;M@ ;99%8=9ʻ 8 ʻ G=>8 ;9;;=ʻ ;A;= 9ʻ Pʻ ?;ʻ B< %98=ʻ 8>ʻ <@ ;9ʻ ?<:ʻ 9 %@G < ;:ʻ ?< ʻ ?;Cʻ 9?8G :ʻ F;ʻ <=9@8 ;:ʻ FCʻ 9;< ?;ʻ 8F9 %=<$Cʻ 8>ʻ ?;ʻ E%=:9ʻ @ ;A;= ;:ʻ ?;% ʻ A8C<B;ʻ FG ʻ ?;Cʻ E; ;ʻ B;=; 8G9 Cʻ 9G@@ %;:ʻ E% ?ʻ ?8 9;9ʻ @ 8A%9%8=9 0<=:ʻ <ʻ 9<>;0ʻ $8=:G$ ʻ 8ʻ ?;ʻ B< ;9ʻ 8>ʻ 8 ;ʻ ?;ʻ E%A;9ʻ 8>ʻ ?;ʻ 9;=< 8 9ʻ E?8ʻ ?<:ʻ F;;=ʻ 9G @ %9;:ʻ % ʻ ?;ʻ % <9ʻ 8>ʻ < @<=%<ʻ E; ;ʻ ;9 8 ;:ʻ E% ?8G ʻ<ʻ <?98 ʻ 8ʻ ?;% ʻ ?G9F<=:9ʻ 0 ?;ʻ A%8 < %8=ʻ 8>ʻ >; < ;ʻ $?<9 % Cʻ E<9ʻ %=;M8 <F Cʻ $?<9 %9;:ʻ E% ?ʻ :;< ?ʻ 0 <=:ʻ <ʻ 9<>;0ʻ 9< G < Cʻ ;BG < %8=ʻ 8>ʻ ?;ʻ:%; ʻ8>ʻ ?;ʻ>< %9?;:ʻ ;<@8 % <=9ʻ ?;ʻ $8=JG; 8 ʻ <99G ;:ʻ ?;ʻ 8>>%$;ʻ 8>ʻ <=ʻ ?G <=;ʻ <=:ʻ < ;= %A;ʻ @?C9%$%<=ʻ ?;ʻA% G;9ʻ 8 % <ʻ < ;ʻ ;JG< Cʻ <G:<F ;ʻ E?; ?;ʻ ?;Cʻ @ 8$;;:;:ʻ > 8 ʻ %;ʻ @8 %$C ʻ ;%B%8G9ʻ @ %=$%@ ;ʻ 8 ʻ ?;ʻ %=9 %=$ʻ 8>ʻ ?G <=% Cʻ Pʻ ?;ʻ]8> ;=ʻ ?< <=BG;:ʻ ?%9ʻ 88@9ʻ 0 <=:ʻ % ʻ E<9ʻ ?%9ʻ $8=9 <= ʻ ?; ;ʻ ?< ʻ =< %8=< ʻ A%$;ʻ <=:ʻ G%=ʻ < ;ʻ %=9;@< N <F Cʻ $8==;$;:0ʻ ?< ʻ A%$ 8 Cʻ %9ʻ ?;ʻ > G% ʻ 8>ʻ 8 < ʻ <9ʻ E; ʻ <9ʻ % % < Cʻ A% G;ʻ0ʻ <=:ʻ ?< ʻ ?;ʻ@ %=$; ʻ <=:ʻ ;A;=ʻ ?;ʻ @;8@ ;ʻ < ;ʻ ;9@8=9%F ;ʻ >8 ʻ ?;ʻ$ % ;9ʻ E?%$?ʻ ?;Cʻ=;B ;$ ʻ 8ʻ @G=%9?

%1#+,' N
3 +,#'

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patience had been exhausted by delay and disappointment, the Roman general repassed the Hadriatic, and expected at Dyrrachium the arrival of the troops, which were slowly assembled among the subjects and allies of the empire. His powers were still inadequate to the deliverance of Rome, which was closely besieged by the Gothic king. The Appian way, a march of forty days, was covered by the barbarians; and, as the prudence of Belisarius declined a battle, he preferred the safe and speedy navigation of five days from the coast of Epirus to the mouth of the Tiber.

Rome besieged by the Goths A.D. 546, May

After reducing, by force or treaty, the towns of inferior note in the midland provinces of Italy, Totila proceeded, not to assault, but to encompass and starve, the ancient capital.[25] Rome was afflicted by the avarice, and guarded by the valour, of Bessas, a veteran chief of Gothic extraction, who filled, with a garrison of three thousand soldiers, the spacious circle of her venerable walls. From the distress of the people he extracted a profitable trade, and secretly rejoiced in the continuance of the siege. It was for his use that the granaries had been replenished; the charity of Pope Vigilius had purchased and embarked an ample supply of Sicilian corn;[26] but the vessels which escaped the barbarians[27] were seized by a rapacious governor, who imparted a scanty sustenance to the soldiers and sold the remainder to the wealthy Romans. The medimnus, or fifth part of the quarter of wheat, was exchanged for seven pieces of gold; fifty pieces were given for an ox, a rare and accidental prize; the progress of famine enhanced this exorbitant value, and the mercenaries were tempted to deprive themselves of the allowance which was scarcely sufficient for the support of life. A tasteless and unwholesome mixture, in which the bran thrice exceeded the quantity of flour, appeased the hunger of the poor; they were gradually reduced to feed on dead horses, dogs, cats, and mice, and eagerly to snatch the grass and even the nettles which grew among the ruins of the city. A crowd of spectres, pale and emaciated, their bodies oppressed with disease and their minds with despair, surrounded the palace of the governor, urged, with unavailing truth, that it was the duty of a master to maintain his slaves, and humbly

[About £22 for a quarter] [About £30]

[25] [The siege probably began in last months of A.D. 545.]

[26] [Vigilius was then in Sicily.]

[27] [None of the ships sent by Vigilius escaped the Goths. See Proc. B. G. 3, 15, ad fin. The corn from Sicily which Bessas "seized" must be distinguished both from that sent by Vigilius and that mentioned in c. 13.]

requested that he would provide for their subsistence, permit their flight, or command their immediate execution. Bessas replied, with unfeeling tranquillity, that it was impossible to feed, unsafe to dismiss, and unlawful to kill, the subjects of the emperor. Yet the example of a private citizen might have shewn his countrymen that a tyrant cannot withhold the privilege of death. Pierced by the cries of five children, who vainly called on their father for bread, he ordered them to follow his steps, advanced with calm and silent despair to one of the bridges of the Tiber, and, covering his face, threw himself headlong into the stream, in the presence of his family and the Roman people. To the rich and pusillanimous, Bessas[28] sold the permission of departure; but the greatest part of the fugitives expired on the public highways, or were intercepted by the flying parties of barbarians. In the meanwhile, the artful governor soothed the discontent, and revived the hopes, of the Romans, by the vague reports of the fleets and armies which were hastening to their relief from the extremities of the East. They derived more rational comfort from the assurance that Belisarius had landed at the *port*; and, without numbering his forces, they firmly relied on the humanity, the courage, and the skill of their great deliverer.

Attempt of Belisarius

The foresight of Totila had raised obstacles worthy of such an antagonist.[29] Ninety furlongs below the city, in the narrowest part of the river, he joined the two banks by strong and solid timbers in the form of a bridge; on which he erected two lofty towers, manned by the bravest of his Goths, and profusely stored with missile weapons and engines of offence. The approach of the bridge and towers was covered by a strong and massy chain of iron; and the chain, at either end, on the opposite sides of the Tiber, was defended by a numerous and chosen detachment of archers. But the enterprise of forcing these barriers and relieving the capital displays a shining example of the boldness and conduct of Belisarius. His cavalry advanced from the port along the public road, to awe the

[28] The avarice of Bessas is not dissembled by Procopius (l. iii. c. 17, 20). He expiated the loss of Rome by the glorious conquest of Petræa (Goth. l. iv. c. 12); but the same vices followed him from the Tiber to the Phasis (c. 13); and the historian is equally true to the merits and defects of his character. The chastisement which the author of the romance of *Bélisaire* has inflicted on the oppressor of Rome is more agreeable to justice than to history.

[29] [In the following episode it is to be remembered that the Romans now held Portus, on the right bank, while the Goths held Ostia, on the left. In the siege of 537, the Goths had held Portus, the Romans Ostia.]

motions, and distract the attention, of the enemy. His infantry and provisions were distributed in two hundred large boats; and each boat was shielded by an high rampart of thick planks, pierced with many small holes for the discharge of missile weapons. In the front, two large vessels were linked together to sustain a floating castle, which commanded the towers of the bridge, and contained a magazine of fire, sulphur, and bitumen.[30] The whole fleet, which the general led in person, was laboriously moved against the current of the river. The chain yielded to their weight, and the enemies who guarded the banks were either slain or scattered.[31] As soon as they touched the principal barrier, the fire-ship was instantly grappled to the bridge; one of the towers, with two hundred Goths, was consumed by the flames; the assailants shouted victory; and Rome was saved, if the wisdom of Belisarius had not been defeated by the misconduct of his officers. He had previously sent orders to Bessas to second his operations by a timely sally from the town; and he had fixed his lieutenant, Isaac, by a peremptory command, to the station of the port. But avarice rendered Bessas immoveable; while the youthful ardour of Isaac delivered him into the hands of a superior enemy. The exaggerated rumour of his defeat was hastily carried to the ears of Belisarius: he paused; betrayed in that single moment of his life some emotions of surprise and perplexity; and reluctantly sounded a retreat to save his wife Antonina, his treasures, and the only harbour which he possessed on the Tuscan coast. The vexation of his mind produced an ardent and almost mortal fever; and Rome was left without protection to the mercy or indignation of Totila. The continuance of hostilities had embittered the national hatred; the Arian clergy was ignominiously driven from Rome; Pelagius, the archdeacon, returned without success from an embassy to the Gothic camp; and a Sicilian bishop, the envoy or nuncio of the pope, was deprived of both of his hands, for daring to utter falsehoods in the service of the church and state.[32]

[30] [A boat (λέμβος) containing these substances was suspended at the top of the tower; and probably worked by a crane; for it was cast into the bridge-tower of Totila which stood on the northern bank.]

[31] [The words of Procopius seem rather to imply that the enemies were first destroyed or scattered, and that then the chain was removed, presumably by being unfastened at the banks (τὴν ἅλυσιν ἀνελόμενοι). There seems no reason to suspect, with Mr. Hodgkin, that divers were at work.]

[32] ['This sentence', referring to previous events, might mislead the reader. The expulsion of the Arian clergy took place in A.D. 544, the fruitless mission of Pelagius near the beginning of the siege; and the bishop who was mutilated had come with the corn-ships sent by Vigilius.]

Famine had relaxed the strength and discipline of the garrison of Rome. They could derive no effectual service from a dying people; and the inhuman avarice of the merchant at length absorbed the vigilance of the governor. Four Isaurian sentinels, while their companions slept and their officers were absent, descended by a rope from the wall, and secretly proposed to the Gothic king to introduce his troops into the city. The offer was entertained with coldness and suspicion; they returned in safety; they twice repeated their visit; the place was twice examined; the conspiracy was known and disregarded; and no sooner had Totila consented to the attempt, than they unbarred the Asinarian gate and gave admittance to the Goths. Till the dawn of day they halted in order of battle, apprehensive of treachery or ambush; but the troops of Bessas, with their leader, had already escaped; and, when the king was pressed to disturb their retreat, he prudently replied that no sight could be more grateful than that of a flying enemy. The patricians who were still possessed of horses, Decius, Basilius,[33] &c., accompanied the governor; their brethren, among whom Olybrius, Orestes, and Maximus are named by the historian, took refuge in the church of St. Peter; but the assertion that only five hundred persons remained in the capital inspires some doubt of the fidelity either of his narrative or of his text. As soon as daylight had displayed the entire victory of the Goths, their monarch devoutly visited the tomb of the prince of the apostles; but, while he prayed at the altar, twenty-five soldiers and sixty citizens were put to the sword in the vestibule of the temple. The archdeacon Pelagius[34] stood before him with the gospels in his hand. "O Lord, be merciful to your servant." „ Pelagius," said Totila with an insulting smile, "your pride now condescends to become a suppliant." "I *am* a suppliant," replied the prudent archdeacon; "God has now made us your subjects, and, as your subjects, we are entitled to your clemency." At his humble prayer, the lives of the Romans were spared; and the chastity of the maids and matrons was preserved inviolate from the passions of the hungry soldiers. But they were rewarded by the freedom of pillage, after the most

Rome taken by the Goths. A.D. 546, Dec. 17

[33] [Perhaps the same as the Basil who was the last Roman consul.]

[34] During the long exile, and after the death, of Vigilius, the Roman church was governed, at first by the archdeacon, and at length (A.D. 555) by the pope, Pelagius, who was not thought guiltless of the sufferings of his predecessor. See the original lives of the popes under the name of Anastasius (Muratori, Script. Rer. Italicarum, tom. iii. P. i. p. 130, 131), who relates several curious incidents of the sieges of Rome and the wars of Italy.

precious spoils had been reserved for the royal treasury. The houses of the senators were plentifully stored with gold and silver; and the avarice of Bessas had laboured with so much guilt and shame for the benefit of the conqueror. In this revolution the sons and daughters of Roman consuls tasted the misery which they had spurned or relieved, wandered in tattered garments through the streets of the city, and begged their bread, perhaps without success, before the gates of their hereditary mansions. The riches of Rusticiana, the daughter of Symmachus and widow of Boethius, had been generously devoted to alleviate the calamities of famine. But the Barbarians were exasperated by the report that she had prompted the people to overthrow the statues of the great Theodoric; and the life of that venerable matron would have been sacrificed to his memory, if Totila had not respected her birth, her virtues, and even the pious motive of her revenge. The next day he pronounced two orations, to congratulate and admonish his victorious Goths, and to reproach the senate, as the vilest of slaves, with their perjury, folly, and ingratitude; sternly declaring that their estates and honours were justly forfeited to the companions of his arms. Yet he consented to forgive their revolt, and the senators repaid his clemency by dispatching circular letters to their tenants and vassals in the provinces of Italy, strictly to enjoin them to desert the standard of the Greeks, to cultivate their lands in peace, and to learn from their masters the duty of obedience to a Gothic sovereign. Against the city which had so long delayed the course of his victories he appeared inexorable: one-third of the walls, in different parts, were demolished by his command; fire and engines prepared to consume or subvert the most stately works of antiquity; and the world was astonished by the fatal decree, that Rome should be changed into a pasture for cattle. The firm and temperate remonstrance of Belisarius suspended the execution; he warned the Barbarian not to sully his fame by the destruction of those monuments which were the glory of the dead and the delight of the living; and Totila was persuaded by the advice of an enemy to preserve Rome as the ornament of his kingdom or the fairest pledge of peace and reconciliation. When he had signified to the ambassadors of Belisarius his intention of sparing the city, he stationed an army at the distance of one hundred and twenty furlongs, to observe the motions of the Roman general. With the remainder of his forces, he marched into Lucania and Apulia, and occupied on the summit of mount

Garganus [35] one of the camps of Hannibal.[36] The senators were dragged in his train, and afterwards confined in the fortresses of Campania; the citizens, with their wives and children, were dispersed in exile; and during forty days Rome was abandoned to desolate and dreary solitude.[37]

Recovered by Belisarius. A.D. 547, February

The loss of Rome was speedily retrieved by an action to which, according to the event, the public opinion would apply the names of rashness or heroism. After the departure of Totila, the Roman general sallied from the port at the head of a thousand horse, cut in pieces the enemy who opposed his progress, and visited with pity and reverence the vacant space of the *eternal* city. Resolved to maintain a station so conspicuous in the eyes of mankind, he summoned the greatest part of his troops to the standard which he erected on the Capitol; the old inhabitants were recalled by the love of their country and the hopes of food; and the keys of Rome were sent a second time to the emperor Justinian. The walls, as far as they had been demolished by the Goths, were repaired with rude and dissimilar materials; the ditch was restored; iron spikes [38] were profusely scattered on the highways to annoy the feet of the horses; and, as new gates could not suddenly be procured, the entrance was guarded by a Spartan rampart of his bravest soldiers. At the expiration of twenty-five days, Totila returned by hasty marches from Apulia, to avenge the injury and disgrace. Belisarius expected his approach. The Goths were thrice repulsed in three general assaults; they lost the flower of their troops; the royal standard had almost

[35] Mount Garganus (now Monte St. Angelo), in the kingdom of Naples, runs three hundred stadia into the Hadriatic Sea (Strab. l. vi. p. 436 [3, § 9]), and in the darker ages was illustrated by the apparition, miracles, and church of St. Michael the archangel. Horace, a native of Apulia or Lucania, had seen the elms and oaks of Garganus labouring and bellowing with the north wind that blew on that lofty coast (Carm. ii. 9; Epist. ii. i. 201 [*leg.* 202]).

[36] I cannot ascertain this particular camp of Hannibal; but the Punic quarters were long and often in the neighbourhood of Arpi (T. Liv. xxii. 9, 12; xxiv. 3, &c.).

[37] Totila . . . Romam ingreditur . . . ac evertit muros domos aliquantas igni comburens, ac omnes Romanorum res in prædam accepit, hos ipsos Romanos in Campaniam captivos abduxit. Post quam devastationem, xl. aut amplius dies, Roma fuit ita desolata, ut nemo ibi hominum, nisi (*nullae?*) bestiæ morarentur (Marcellin. in Chron. p. 54).

[38] The *tribuli* are small engines with four spikes, one fixed in the ground, the three others erect or adverse (Procopius, Gothic. l. iii. c. 24; Just. Lipsius, Poliorcetω, l. v. c. 3). [Rather the opposite; three fixed in the ground, one always erect, however thrown. The description of Procopius is quite clear.] The metaphor was borrowed from the tribuli (*land-caltrops*), an herb with a prickly fruit common in Italy (Martin, ad Virgil. Georgic. i. 153, vol. ii. p. 33).

fallen into the hands of the enemy; and the fame of Totila sunk, as it had risen, with the fortune of his arms. Whatever skill and courage could achieve had been performed by the Roman general; it remained only that Justinian should terminate, by a strong and seasonable effort, the war which he had ambitiously undertaken. The indolence, perhaps the impotence, of a prince who despised his enemies and envied his servants protracted the calamities of Italy. After a long silence, Belisarius was commanded to leave a sufficient garrison at Rome, and to transport himself into the province of Lucania, whose inhabitants, inflamed by catholic zeal, had cast away the yoke of their Arian conquerors. In this ignoble warfare, the hero, invincible against the power of the Barbarians, was basely vanquished by the delay, the disobedience, and the cowardice of his own officers. He reposed in his winter-quarters of Crotona, in the full assurance that the two passes of the Lucanian hills were guarded by his cavalry. They were betrayed by treachery or weakness; and the rapid march of the Goths [A.D. 548] scarcely allowed time for the escape of Belisarius to the coast of Sicily. At length a fleet and army were assembled for the relief of Ruscianum, or Rossano,[39] a fortress, sixty furlongs from the ruins of Sybaris, where the nobles of Lucania had taken refuge. In the first attempt the Roman forces were dissipated by a storm. In the second they approached the shore; but they saw the hills covered with archers, the landing-place defended by a line of spears, and the king of the Goths impatient for battle. The conqueror of Italy retired with a sigh, and continued to languish, inglorious and inactive, till Antonina, who had been sent to Constantinople to solicit succours, obtained, after the death of the empress, the permission of his return.

Final recall of Belisarius. A.D. 548, September

The five last campaigns of Belisarius might abate the envy of his competitors, whose eyes had been dazzled and wounded by the blaze of his former glory. Instead of delivering Italy from the Goths, he had wandered like a fugitive along the coast, without daring to march into the country or to accept the bold and repeated challenge of Totila. Yet, in the judgment of the few who could discriminate counsels from events and compare the instruments with the execution, he appeared a more con-

[39] Ruscia, the *navale Thuriorum*, was transferred to the distance of sixty stadia to Ruscianum, Rossano, an archbishoprick without suffragans. The republic of Sybaris is now the estate of the duke of Corigliano (Riedesel, Travels into Magna Græcia and Sicily, p. 166-171).

summate master of the art of war, than in the season of his prosperity, when he presented two captive kings before the throne of Justinian. The valour of Belisarius was not chilled by age; his prudence was matured by experience; but the moral virtues of humanity and justice seem to have yielded to the hard necessity of the times. The parsimony or poverty of the emperor compelled him to deviate from the rule of conduct which had deserved the love and confidence of the Italians. The war was maintained by the oppression of Ravenna, Sicily, and all the faithful subjects of the empire; and the rigorous prosecution of Herodian provoked that injured or guilty officer to deliver Spoleto into the hands of the enemy.[40] The avarice of Antonina, which had been sometimes diverted by love, now reigned without a rival in her breast. Belisarius himself had always understood that riches, in a corrupt age, are the support and ornament of personal merit. And it cannot be presumed that he should stain his honour for the public service, without applying a part of the spoil to his private emolument. The hero had escaped the sword of the barbarians, but the dagger of conspiracy [41] awaited his return. In the midst of wealth and honours, Artaban, who had chastised the African tyrant, complained of the ingratitude of courts. He aspired to Præjecta, the emperor's niece,[42] who wished to reward her deliverer; but the impediment of his previous marriage was asserted by the piety of Theodora. The pride of royal descent was irritated by flattery; and the service in which he gloried had proved him capable of bold and sanguinary deeds. The death of Justinian was resolved, but the conspirators delayed the execution till they could surprise Belisarius, disarmed and naked, in the palace of Constantinople. Not a hope could be entertained of shaking his long-tried fidelity; and they justly dreaded the revenge, or rather justice, of the veteran general, who might speedily assemble an army in Thrace, to punish the assassins, and perhaps to enjoy the fruits of their crime. Delay afforded time for rash communications and honest confessions; Artaban and his accomplices were condemned by the senate; but the extreme clemency of Justinian detained them in the

[40] [A.D. 545. It was recovered A.D. 547; lost again; and recovered once more A.D. 552.]

[41] This conspiracy is related by Procopius (Gothic. l. iii. c. 31, 32) with such freedom and candour that the liberty of the Anecdotes gives him nothing to add.

[42] [Widow of Areobindus.]

gentle confinement of the palace, till he pardoned their flagitious attempt against his throne and life. If the emperor forgave his enemies, he must cordially embrace a friend whose victories were alone remembered, and who was endeared to his prince by the recent circumstance of their common danger. Belisarius reposed from his toils, in the high station of general of the East and count of the domestics; and the older consuls and patricians respectfully yielded the precedency of rank to the peerless merit of the first of the Romans.[43] The first of the Romans still submitted to be the slave of his wife; but the servitude of habit and affection became less disgraceful when the death of Theodora had removed the baser influence of fear. Joannina their daughter, and the sole heiress of their fortunes, was betrothed to Anastasius the grandson, or rather the nephew, of the empress,[44] whose kind interposition forwarded the consummation of their youthful loves. But the power of Theodora expired, the parents of Joannina returned, and her honour, perhaps her happiness, were sacrificed to the revenge of an unfeeling mother, who dissolved the imperfect nuptials before they had been ratified by the ceremonies of the church.[45]

Rome again taken by the Goths. A.D. 549

Before the departure of Belisarius, Perusia was besieged, and few cities were impregnable to the Gothic arms. Ravenna, Ancona, and Crotona still resisted the Barbarians; and, when Totila asked in marriage one of the daughters of France,[46] he was stung by the just reproach that the king of Italy was unworthy of his title till it was acknowledged by the Roman people. Three thousand of the bravest soldiers had been left

[43] The honours of Belisarius are gladly commemorated by his secretary (Procop. Goth. l. iii. c. 35; l. iv. c. 21). The title of Στρατηγός is ill translated, at least in this instance, by præfectus prætorio; and to a military character magister militum is more proper and applicable (Ducange, Gloss. Græc. p. 1458, 1459).

[44] Alemannus (ad Hist. Arcanam, p. 68), Ducange (Familiæ Byzant. p. 98), and Heineccius (Hist. Juris Civilis, p. 434), all three represent Anastasius as the son of the daughter of Theodora; and their opinion firmly reposes on the unambiguous testimony of Procopius (Anecdot. c. 4, 5.—θυγατριδῷ, twice repeated). And yet I will remark, 1. That in the year 547, Theodora could scarcely have a grandson of the age of puberty; 2. That we are totally ignorant of this daughter and her husband; and, 3. That Theodora concealed her bastards, and that her grandson by Justinian would have been heir apparent of the empire.

[45] The ἁμαρτήματα, or sins, of the hero, in Italy and after his return, are manifested ἀπαρακαλύπτως, and most probably swelled, by the author of the Anecdotes (c. 4, 5). The designs of Antonina were favoured by the fluctuating jurisprudence of Justinian. On the law of marriage and divorce the emperor was trocho versatilior (Heineccius, Element. Juris Civil. ad Ordinem Pandect. P. iv. No. 233).

[46] [Probably of Theudibert of Metz.]

to defend the capital. On the suspicion of a monopoly, they massacred the governor, and announced to Justinian, by a deputation of the clergy, that, unless their offence was pardoned and their arrears were satisfied, they should instantly accept the tempting offers of Totila. But the officer who succeeded to the command (his name was Diogenes) deserved their esteem and confidence; and the Goths, instead of finding an easy conquest, encountered a vigorous resistance from the soldiers and people, who patiently endured the loss of the port and of all the maritime supplies. The siege of Rome would perhaps have been raised, if the liberality of Totila to the Isaurians had not encouraged some of their venal countrymen to copy the example of treason. In a dark night, while the Gothic trumpets sounded on another side, they silently opened the gate of St. Paul; the barbarians rushed into the city; and the flying garrison was intercepted before they could reach the harbour of Centumcellæ. [Civita Vecchia] A soldier trained in the school of Belisarius, Paul of Cilicia, retired with four hundred men to the mole of Hadrian. They repelled the Goths; but they felt the approach of famine; and their aversion to the taste of horse-flesh confirmed their resolution to risk the event of a desperate and decisive sally. But their spirit insensibly stooped to the offers of capitulation; they retrieved their arrears of pay, and preserved their arms and horses, by enlisting in the service of Totila; their chiefs, who pleaded a laudable attachment to their wives and children in the East, were dismissed with honour; and above four hundred enemies, who had taken refuge in the sanctuaries, were saved by the clemency of the victor. He no longer entertained a wish of destroying the edifices of Rome,[47] which he now respected as the seat of the Gothic kingdom; the senate and people were restored to their country; the means of subsistence were liberally provided; and Totila, in the robe of peace, exhibited the equestrian games of the circus. Whilst he amused the eyes of the multitude, four hundred vessels were prepared for the embarkation of his troops. The cities of Rhegium and Tarentum [A.D. 549-50] were reduced; he passed into Sicily, the object of his implacable resentment; and the island was stripped of its gold and silver,

[47] The Romans were still attached to the monuments of their ancestors, and, according to Procopius (Goth. l. iv. c. 22), the galley of Æneas, of a single rank of oars, 25 feet in breadth, 120 in length, was preserved entire in the *navalia*, near Monte Testaceo, at the foot of the Aventine (Nardini, Roma Antica, l. vii. c. 9, p. 466. Donatus, Roma Antiqua, l. iv. c. 13, p. 334). But all antiquity is ignorant of this relic.

of the fruits of the earth, and of an infinite number of horses, sheep, and oxen. Sardinia and Corsica obeyed the fortune of Italy; and the sea coast of Greece was visited by a fleet of [A.D. 551] three hundred galleys.[48] The Goths were landed in Corcyra and the ancient continent of Epirus; they advanced as far as Nicopolis, the trophy of Augustus, and Dodona,[49] once famous by the oracle of Jove. In every step of his victories, the wise Barbarian repeated to Justinian his desire of peace, applauded the concord of their predecessors, and offered to employ the Gothic arms in the service of the empire.

Preparations of Justinian for the Gothic war. A.D 549-551

Justinian was deaf to the voice of peace; but he neglected the prosecution of war; and the indolence of his temper disappointed, in some degree, the obstinacy of his passions. From this salutary slumber the emperor was awakened by the pope Vigilius and the patrician Cethegus, who appeared before his throne, and adjured him in the name of God and the people to resume the conquest and deliverance of Italy. In the choice of the generals, caprice, as well as judgment, was shewn. A fleet and army sailed for the relief of Sicily, under the conduct of Liberius; but his want of youth and experience were afterwards discovered, and, before he touched the shores of the island, he was overtaken by his successor. In the place of Liberius the conspirator Artaban was raised from a prison to military honours; in the pious presumption that gratitude would animate his valour and fortify his allegiance. Belisarius reposed in the shade of his laurels, but the command of the principal army was reserved for Germanus,[50] the emperor's nephew, whose rank and merit had been long depressed by the jealousy of the court. Theodora had injured him in the rights of a private citizen, the marriage of his children, and the testament of his brother; and, although his conduct was pure and blameless, Justinian was displeased that he should be

[48] In these seas, Procopius searched without success for the isle of Calypso. He was shewn, at Phæacia or Corcyra, the petrified ship of Ulysses (Odyss. xiii. 163); but he found it a recent fabric of many stones, dedicated by a merchant to Jupiter Casius (l. iv. c. 22). Eustathius had supposed it to be the fanciful likeness of a rock.

[49] M. d'Anville (Mémoires de l'Acad. tom. xxxii. p. 513-528) illustrates the gulf of Ambracia; but he cannot ascertain the situation of Dodona. A country in sight of Italy is less known than the wilds of America.

[50] See the acts of Germanus in the public (Vandal. l. ii. c. 16, 17, 18; Goth. l. iii. c. 31, 32) and private history (Anecdot. c. 5), and those of his son Justin in Agathias (l. iv. p. 130, 131 [c. 21]). Notwithstanding an ambiguous expression of Jornandes, fratri suo, Alemannus has proved that he was the son of the emperor's brother.

thought worthy of the confidence of the malecontents. The life of Germanus was a lesson of implicit obedience; he nobly refused to prostitute his name and character in the factions of the circus; the gravity of his manners was tempered by innocent cheerfulness; and his riches were lent without interest to indigent or deserving friends. His valour had formerly triumphed over the Sclavonians of the Danube and [A.D. 527] the rebels of Africa; the first report of his promotion revived the hopes of the Italians; and he was privately assured that a crowd of Roman deserters would abandon, on his approach, the standard of Totila. His second marriage with Malasontha, [Matasuentha] the grand-daughter of Theodoric, endeared Germanus to the Goths themselves; and they marched with reluctance against the father of a royal infant, the last offspring of the line of Amali.[51] A splendid allowance was assigned by the emperor; the general contributed his private fortune; his two sons were popular and active; and he surpassed, in the promptitude and success of his levies, the expectation of mankind. He was permitted to select some squadrons of Thracian cavalry; the veterans, as well as the youth of Constantinople and Europe, engaged their voluntary service; and as far as the heart of Germany[52] his fame and liberality attracted the aid of the Barbarians. The Romans advanced to Sardica; an army of Sclavonians fled before their march; but within two days of their final departure, the designs of Germanus were terminated by his malady and death. Yet the impulse which he had given to the Italian war still continued to act with energy and effect. The maritime towns, Ancona, Crotona, Centumcellæ, resisted the assaults of Totila. Sicily was reduced by the zeal of Artaban, and the Gothic navy was defeated near the coast of the Hadriatic. The two fleets were almost equal, forty-seven to fifty galleys: the victory was decided by the knowledge and dexterity of the Greeks; but the ships were so closely grappled that only twelve of the Goths escaped from this unfortunate conflict. They affected to depreciate an element in which they were unskilled, but their own experience confirmed the truth of a maxim, that the master of the sea will always acquire the dominion of the land.[53]

[51] Conjuncta Aniciorum gens cum Amalâ stirpe spem adhuc utriusque generis promittit, Jornandes, c. 60, p. 703. He wrote at Ravenna before the death of Totila.

[52] [Procopius says nothing of troops from the heart of Germany.]

[53] The third book of Procopius is terminated by the death of Germanus (Add.), v. c. 23, 24, 25, 26).

Character and expedition of the eunuch Narses. A.D. 552

After the loss of Germanus, the nations were provoked to smile by the strange intelligence that the command of the Roman armies was given to an eunuch. But the eunuch Narses[54] is ranked among the few who have rescued that unhappy name from the contempt and hatred of mankind. A feeble diminutive body concealed the soul of a statesman and a warrior. His youth had been employed in the management of the loom and distaff, in the cares of the household, and the service of female luxury; but, while his hands were busy, he secretly exercised the faculties of a vigorous and discerning mind. A stranger to the schools and the camp, he studied in the palace to dissemble, to flatter, and to persuade; and, as soon as he approached the person of the emperor, Justinian listened with surprise and pleasure to the manly counsels of his chamberlain and private treasurer.[55] The talents of Narses were tried and improved in frequent embassies; he led an army into Italy, acquired a practical knowledge of the war and the country, and presumed to strive with the genius of Belisarius. Twelve years after his return, the eunuch was chosen to achieve the conquest which had been left imperfect by the first of the Roman generals. Instead of being dazzled by vanity or emulation, he seriously declared that, unless he were armed with an adequate force, he would never consent to risk his own glory and that of his sovereign. Justinian granted to the favourite what he might have denied to the hero: the Gothic war was rekindled from its ashes, and the preparations were not unworthy of the ancient majesty of the empire. The key of the public treasure was put into his hand, to collect magazines, to levy soldiers, to purchase arms and horses, to discharge the arrears of pay, and to tempt the fidelity of the fugitives and deserters. The troops of Germanus were still in arms; they halted at Salona in the expectation of a new leader; and legions of subjects and allies were created by the well-known liberality of the eunuch Narses.

[54] Procopius relates the whole series of this second Gothic war and the victory of Narses (l. iv. c. 21, 26-35). A splendid scene! Among the six subjects of epic poetry which Tasso revolved in his mind, he hesitated between the conquests of Italy by Belisarius and by Narses (Hayley's Works, vol. iv. p. 70).

[55] The country of Narses is unknown, since he must not be confounded with the Persarmenian. Procopius styles him (Goth. l. ii. c. 13) βασιλικῶν χρημάτων ταμίας; Paul Warnefrid (l. ii. c. 3, p. 776), Chartularius: Marcellinus adds the name of Cubicularius. In an inscription on the Salarian bridge he is entitled Ex-consul, Ex-præpositus, Cubiculi Patricius (Mascou, Hist. of the Germans, l. xiii. c. 25). The law of Theodosius against eunuchs was obsolete or abolished (Annotation xx.); but the foolish prophecy of the Romans subsisted in full vigour (Procop. l. iv. c. 21). [Narses ὁ βασιλέως ταμίας ἦν a Persarmenian; Proc., B. P. i. 15, p. 79, ed. Bonn.]

The king of the Lombards [56] satisfied or surpassed the obligations of a treaty, by lending two thousand two hundred [57] of his bravest warriors, who were followed by three thousand of their martial attendants. Three thousand Heruli fought on horseback under Philemuth, their native chief; and the noble Aratus, who adopted the manners and discipline of Rome, conducted a band of veterans of the same nation. Dagistheus was released from prison to command the Huns; and Kobad, the grandson and nephew of the Great King, was conspicuous by the regal tiara at the head of his faithful Persians, who had devoted themselves to the fortunes of their prince.[58] Absolute in the exercise of his authority, more absolute in the affection of his troops, Narses led a numerous and gallant army from Philippopolis to Salona, from whence he coasted the eastern side of the Hadriatic as far as the confines of Italy. His progress was checked. The East could not supply vessels capable of transporting such multitudes of men and horses. The Franks, who in the general confusion had usurped the greater part of the Venetian province, refused a free passage to the friends of the Lombards. The station of Verona was occupied by Teias, with the flower of the Gothic forces; and that skilful commander had overspread the adjacent country with the fall of woods and the inundation of waters.[59] In this perplexity, an officer of experience proposed a measure, secure by the appearance of rashness: that the Roman army should cautiously advance along the seashore, while the fleet preceded their march, and successively cast a bridge of boats over the mouths of the rivers, the Timavus, the Brenta, Adige, and the Po, that fall into the Hadriatic to the north of Ravenna. Nine days he reposed in the city, collected the fragments of the Italian army, and marched towards Rimini to meet the defiance of an insulting enemy.

[56] Paul Warnefrid, the Lombard, records with complacency the succour, service, and honourable dismission of his countrymen—reipublicæ Romanæ [Rom. rei p.] adversus æmulos adjutores fuerant [fuerunt] (l. ii. c. 1, p. 774, edit. Grot.). I am surprised that Alboin, their martial king, did not lead his subjects in person. [Audoin, father of Alboin, was king at this time; Procop. B. G. iv. 26.]

[57] [Read, two thousand *five* hundred.]

[58] He was, if not an impostor, the son of the blind Zames, saved by compassion, and educated in the Byzantine court by the various motives of policy, pride, and generosity (Procop. Persic. l. i. c. 23).

[59] In the time of Augustus, and in the middle ages, the whole waste from Aquileia to Ravenna was covered with woods, lakes, and morasses. Man has subdued nature, and the land has been cultivated, since the waters are confined and embanked. See the learned researches of Muratori (Antiquitat. Italiæ medii Ævi, tom. i. dissert. xxi. p. 253, 254), from Vitruvius, Strabo, Herodian, old charters, and local knowledge.

Defeat and death of Totila. A.D. 552, July

The prudence of Narses impelled him to speedy and decisive action. His powers were the last effort of the state: the cost of each day accumulated the enormous account; and the nations, untrained to discipline or fatigue, might be rashly provoked to turn their arms against each other, or against their benefactor. The same considerations might have tempered the ardour of Totila. But he was conscious, that the clergy and people of Italy aspired to a second revolution: he felt or suspected the rapid progress of treason, and he resolved to risk the Gothic kingdom on the chance of a day, in which the valiant would be animated by instant danger and the disaffected might be awed by mutual ignorance. In his march from Ravenna, the Roman general chastised the garrison of Rimini, traversed in a direct line the hills of Urbino, and re-entered the Flaminian way, nine miles beyond the perforated rock, an obstacle of art and nature which might have stopped or retarded his progress.[60] The Goths were assembled in the neighbourhood of Rome, they advanced without delay to seek a superior enemy, and the two armies approached each other at the distance of one hundred furlongs, between Tagina[61] and the sepulchres of the Gauls.[62]

[Petra Pertusa]

[60] The Flaminian way, as it is corrected from the Itineraries, and the best modern maps, by d'Anville (Analyse de l'Italie, p. 147-162), may be thus stated: ROME to Narni, 51 Roman miles; Terni, 57; Spoleto, 75; Foligno, 88; Nocera, 103; Cagli, 142; Intercisa [Petra Pertusa], 157; Fossombrone, 160; Fano, 176; Pesaro, 184; RIMINI, 208—about 189 English miles. He takes no notice of the death of Totila; but Wesseling (Itinerar. p. 614) exchanges for the field of *Taginas* the unknown appellation of *Ptanias*, eight miles from Nocera.

[61] Taginæ, or rather Tadinæ, is mentioned by Pliny; but the bishopric of that obscure town, a mile from Gualdo, in the plain, was united, in the year 1007, with that of Nocera. The signs of antiquity are preserved in the local appellations, *Fossato*, the camp; *Capraia*, Caprea; *Bastia*, Busta Gallorum. See Cluverius (Italia Antiqua, l. ii. c. 6, p. 615, 616, 617), Lucas Holstenius (Annotat. ad Cluver. p. 85, 86), Guazzesi (Dissertat. p. 177-217, a professed inquiry), and the maps of the ecclesiastical state and the march of Ancona, by Le Maire and Magini. [See a memoir on the site of the battle by Mr. Hodgkin in the "Atti e memorie della R. Deputazione di Storia Patria per le provincie di Romagna," 1884 (p. 35 *sqq.*), and Italy and her Invaders, iv. p. 710 *sqq.* The site has not been determined with certainty. (1) The mention of the Busta Gallorum (see next note) has been used as an argument for Sassoferrato near Sentinum. Procopius is mistaken in naming Camillus, who fought no battles in Umbria; but it is supposed that he may have been thinking of the Battle of Sentinum (B.C. 295). Sassoferrato is east of the Flaminian road, and is separated from Tadinum by a high pass. (2) Mr. Hodgkin argues for Ad Ensem, or Scheggia, where the Flaminian road reaches the top of the pass. His view is that Narses, having turned the fortress of Petra Pertusa by taking a southern route, reached the Flaminian Way at Callis and marched up to Ad Ensem. This site suits the words of Procopius, ἐν χωρίῳ ὁμαλῷ, "at a level place," but it has been objected that there is hardly room for a battle on such a scale. Procopius states that the distance between the camps of Narses and Totila was at first 100 stadia, and the distance between Scheggia and Tadino, 15 miles, nearly corresponds.]

[62] The battle [of Sentinum] was fought in the year of Rome 458 [B.C. 295]; an

The haughty message of Narses was an offer, not of peace, but of pardon. The answer of the Gothic king declared his resolution to die or conquer. "What day," said the messenger, "will you fix for the combat?" "The eighth day," replied Totila: but early the next morning he attempted to surprise a foe, suspicious of deceit and prepared for battle. Ten thousand Heruli and Lombards, of approved valour and doubtful faith, were placed in the centre. Each of the wings was composed of eight thousand Romans; the right was guarded by the cavalry of the Huns, the left was covered by fifteen hundred chosen horse,[63] destined, according to the emergencies of action, to sustain the retreat of their friends or to encompass the flank of the enemy. From his proper station at the head of the right wing,[64] the eunuch rode along the line, expressing by his voice and countenance the assurance of victory; exciting the soldiers of the emperor to punish the guilt and madness of a band of robbers; and exposing to their view gold chains, collars, and bracelets, the rewards of military virtue. From the event of a single combat they drew an omen of success; and they beheld with pleasure the courage of fifty archers, who maintained a small eminence against three successive attacks of the Gothic cavalry.[65] At the distance only of two bow-shots, the armies spent the morning in dreadful suspense, and the Romans tasted some necessary food, without unloosening the cuirass from their breast, or the bridle from their horses. Narses awaited the charge; and it was delayed by Totila till he had received his last succours of two thousand Goths. While he consumed the hours in fruitless treaty, the king exhibited in a narrow space the strength and agility of a warrior. His armour was enchased with gold; his purple banner floated with the wind: he cast his lance into the air; caught it with the right hand; shifted it to the left; threw himself backwards; recovered his seat; and

the consul Decius, by devoting his own life, assured the triumph of his country and his colleague Fabius (T. Liv. x. 28, 29). Procopius ascribes to Camillus the victory of the *Busta Gallorum*; and his error was branded by Cluverius with the national reproach of Græcorum nugamenta.

[63] [They were drawn up at an angle to the left wing and in front of the eminence which is mentioned below; 500 were to sustain the retreat, if necessary; 1000 to attack the enemy in the rear.]

[64] [Narses, with John, commanded not the right, but the left wing. Proc. B. G. 4, 31 ad init.]

[65] [The author does not bring out sufficiently the importance of this hill, which was in fact the key to the position. It commanded a path by which the Imperialists could have been taken in the rear, if Narses had not anticipated Totila in occupizing it.]

managed a fiery steed in all the paces and evolutions of the equestrian school. As soon as the succours had arrived, he retired to his tent, assumed the dress and arms of a private soldier, and gave the signal of battle. The first line of cavalry advanced with more courage than discretion, and left behind them the infantry of the second line. They were soon engaged between the horns of a crescent, into which the adverse wings had been insensibly curved, and were saluted from either side by the volleys of four thousand archers. Their ardour, and even their distress, drove them forwards to a close and unequal conflict, in which they could only use their lances against an enemy equally skilled in all the instruments of war. A generous emulation inspired the Romans and their barbarian allies; and Narses, who calmly viewed and directed their efforts, doubted to whom he should adjudge the prize of superior bravery. The Gothic cavalry was astonished and disordered, pressed and broken; and the line of infantry, instead of presenting their spears or opening their intervals, were trampled under the feet of the flying horse. Six thousand of the Goths were slaughtered, without mercy, in the field of Tagina. Their prince, with five attendants, was overtaken by Asbad, of the race of the Gepidæ; "Spare the king of Italy," cried a loyal voice, and Asbad struck his lance through the body of Totila. The blow was instantly revenged by the faithful Goths; they transported their dying monarch seven miles[66] beyond the scene of his disgrace; and his last moments were not embittered by the presence of an enemy. Compassion afforded him the shelter of an obscure tomb; but the Romans were not satisfied of their victory, till they beheld the corpse of the Gothic king. His hat, enriched with gems, and his bloody robe, were presented to Justinian by the messengers of triumph.[67]

[To Caprara]

Conquest of Rome by Narses

As soon as Narses had paid his devotions to the Author of victory, and the blessed Virgin, his peculiar patroness,[68] he praised, rewarded, and dismissed the Lombards. The villages had been reduced to ashes by these valiant savages; they ravished matrons and virgins on the altar; their retreat was

[66] [Eleven or twelve miles: 84 stadia (Procop. *ib.* 32).]

[67] Theophanes, Chron. p. 193 [A.M. 6044, John Malalas, 18, p. 486, ed. Bonn, is the source of Theophanes; and the notice is important as giving the date of the arrival of the robe—August, and so rendering it probable that the battle was fought in July]. Hist. Miscell. l. xvi. p. 208.

[68] Evagrius, l. iv. c. 24. The inspiration of the Virgin revealed to Narses the day, and the word, of battle (Paul Diacon. l. ii. c. 3, p. 776).

diligently watched by a strong detachment of regular forces, who prevented a repetition of the like disorders. The victorious eunuch pursued his march through Tuscany, accepted the submission of the Goths, heard the acclamations and often the complaints of the Italians, and encompassed the walls of Rome with the remainder of his formidable host. Round the wide circumference, Narses assigned to himself, and to each of his lieutenants, a real or a feigned attack, while he silently marked the place of easy and unguarded entrance. Neither the fortifications of Hadrian's mole, nor of the port, could long delay the progress of the conqueror; and Justinian once more received the keys of Rome, which, under his reign, had been *five* times taken and recovered.[69] But the deliverance of Rome was the last calamity of the Roman people. The Barbarian allies of Narses too frequently confounded the privileges of peace and war; the despair of the flying Goths found some consolation in sanguinary revenge; and three hundred youths of the noblest families, who had been sent as hostages beyond the Po, were inhumanly slain by the successor of Totila. The fate of the senate suggests an awful lesson of the vicissitude of human affairs. Of the senators whom Totila had banished from their country, some were rescued by an officer of Belisarius and transported from Campania to Sicily; while others were too guilty to confide in the clemency of Justinian, or too poor to provide horses for their escape to the sea-shore. Their brethren languished five years in a state of indigence and exile; the victory of Narses revived their hopes; but their premature return to the metropolis was prevented by the furious Goths, and all the fortresses of Campania were stained with patrician[70] blood. After a period of thirteen centuries, the institution of Romulus expired; and, if the nobles of Rome still assumed the title of senators, few subsequent traces can be discovered of a public council or constitutional order. Ascend six hundred years, and contemplate the kings of the earth soliciting an audience as the slaves or freedmen of the Roman senate![71]

[69] Ἐπὶ τούτου βασιλεύοντος τὸ πέμπτον ἑάλω. In the year 536 by Belisarius, in 546 by Totila, in 547 by Belisarius, in 549 by Totila, and in 552 by Narses. Maltretus had inadvertently translated *sextum*; a mistake which he afterwards retracts: but the mischief was done; and Cousin, with a train of French and Latin readers, have fallen into the snare.

[70] Compare two passages of Procopius (l. iii. c. 26; l. iv. c. 24), which, with some collateral hints from Marcellinus and Jornandes, illustrate the state of the expiring senate.

[71] See, in the example of Prusias, as it is delivered in the fragments of Polybius (Excerpt. Legat. xcvii. p. 927, 928 [Bk. xxx., 16]), a curious picture of a royal slave.

Defeat and death of Teias, the last king of the Goths. A.D. 553, March

The Gothic war was yet alive. The bravest of the nation retired beyond the Po; and Teias was unanimously chosen to succeed and revenge their departed hero. The new king immediately sent ambassadors to implore, or rather to purchase, the aid of the Franks, and nobly lavished for the public safety the riches which had been deposited in the palace of Pavia. The residue of the royal treasure was guarded by his brother Aligern at Cumæ in Campania; but the strong castle which Totila had fortified was closely besieged by the arms of Narses. From the Alps to the foot of mount Vesuvius, the Gothic king, by rapid and secret marches, advanced to the relief of his brother, eluded the vigilance of the Roman chiefs, and pitched his camp on the banks of the Sarnus or *Draco*,[72] which flows from Nuceria into the bay of Naples. The river separated the two armies; sixty days were consumed in distant and fruitless combats, and Teias maintained this important post, till he was deserted by his fleet and the hope of subsistence. With reluctant steps he ascended the *Lactarian* mount, where the physicians of Rome, since the time of Galen, had sent their patients for the benefit of the air and the milk.[73] But the Goths soon embraced a more generous resolution: to descend the hill to dismiss their horses, and to die in arms and in the possession of freedom. The king marched at their head, bearing in his right hand a lance, and an ample buckler in his left: with the one he struck dead the foremost of the assailants; with the other he received the weapons which every hand was ambitious to aim against his life. After a combat of many hours, his left arm was fatigued by the weight of twelve javelins which hung from his shield. Without moving from his ground or suspending his blows, the hero called aloud on his attendants for a fresh buckler, but in the moment while his side was uncovered it was pierced by a mortal dart. He fell; and his head, exalted on a spear, proclaimed to the nations that the Gothic kingdom was no more. But the example of his death served only to animate the

[Jan. and Feb. 553 (?)]

[72] The Δράκων of Procopius (Goth. l. iv. c. 35) is evidently the Sarnus. The text is accused or altered by the rash violence of Cluverius (l. iv. c. 3, p. 1156); but Camillo Pellegrini of Naples (Discorsi sopra la Campania Felice, p. 330, 331) has proved from old records, that as early as the year 822 that river was called the Dracontio, or Draconcello.

[73] Galen (de Method. Medendi, l. v. apud Cluver. l. iv. c. 3, p. 1159, 1160) describes the lofty site, pure air, and rich milk of mount Lactarius, whose medicinal benefits were equally known and sought in the time of Symmachus (l. vi. epist. 1817, ed. Seeck) and Cassiodorius (Var. xi. 10). Nothing is now left except the name of the town *Lettere*.

companions who had sworn to perish with their leader. They fought till darkness descended on the earth. They reposed on their arms. The combat was renewed with the return of light, and maintained with unabated vigour till the evening of the second day. The repose of a second night, the want of water, and the loss of their bravest champions, determined the surviving Goths to accept the fair capitulation which the prudence of Narses was inclined to propose. They embraced the alternative of residing in Italy as the subjects and soldiers of Justinian, or departing with a portion of their private wealth, in search of some independent country.[74] Yet the oath of fidelity or exile was alike rejected by one thousand Goths, who broke away before the treaty was signed, and boldly effected their retreat to the walls of Pavia. The spirit as well as the situation of Aligern prompted him to imitate rather than to bewail his brother: a strong and dexterous archer, he transpierced with a single arrow the armour and breast of his antagonist; and his military conduct defended Cumæ[75] above a year against the forces of the Romans. Their industry had scooped the Sibyll's cave[76] into a prodigious mine; combustible materials were introduced to consume the temporary props; the wall and the gate of Cumæ sunk into the cavern, but the ruins formed a deep and inaccessible precipice. On the fragment of a rock Aligern stood alone and unshaken, till he calmly surveyed the hopeless condition of his country, and judged it more honourable to be the friend of Narses than the slave of the Franks.[77] After the death of Teias, the Roman general separated his troops to reduce the cities of Italy; Lucca sustained a long and vigorous siege; and such was the humanity

[74] Buat (tom. xi. p. 2, &c.) conveys to his favourite Bavaria this remnant of Goths, who by others are buried in the mountains of Uri, or restored to their native isle of Gothland (Mascou, Annot. xxi.).

[75] I leave Scaliger (Animadvers. in Euseb. p. 59) and Salmasius (Exercitat. Pliman. p. 51, 52) to quarrel about the origin of Cumæ, the oldest of the Greek colonies in Italy (Strab. l. v. p. 372 [4, § 4]. Velleius Paterculus, l. i. c. 4), already vacant in Juvenal's time (Satir. iii.), and now in ruins.

[76] Agathias (l. i. c. [*leg.* p.] 21 [c. 10]) settles the Sibyll's cave under the wall of Cumæ; he agrees with Servius (ad l. vi. Æneid.); nor can I perceive why their opinion should be rejected by Heyne, the excellent editor of Virgil (tom. ii. p. 650, 651). In urbe mediâ secreta religio! But Cumæ was not yet built; and the lines (l. vi. 96, 97) would become ridiculous, if Æneas were actually in a Greek city. [Cp. Beloch, Campanien, p. 160. There is no reason to suppose that the cave which is now shown as the Sibyl's grotto, south of L. Avernus, had any ancient tradition associated with it.]

[77] [The surrender of Cumæ was subsequent to that of Lucca.]

or the prudence of Narses that the repeated perfidy of the inhabitants could not provoke him to exact the forfeit lives of their hostages. These hostages were dismissed in safety; and their grateful zeal at length subdued the obstinacy of their countrymen.[78]

Invasion of Italy by the Franks and Alemanni. A.D. 553, August

Before Lucca had surrendered, Italy was overwhelmed by a new deluge of Barbarians. A feeble youth, the grandson of Clovis, reigned over the Austrasians or oriental Franks.[79] The guardians of Theodebald entertained with coldness and reluctance the magnificent promises of the Gothic ambassadors. But the spirit of a martial people outstripped the timid counsels of the court: two brothers, Lothaire and Buccelin,[80] the dukes of the Alemanni, stood forth as the leaders of the Italian war; and seventy-five thousand Germans descended in the autumn from the Rhætian Alps into the plain of Milan. The vanguard of the Roman army was stationed near the Po, under the conduct of Fulcaris, a bold Herulian, who rashly conceived that personal bravery was the sole duty and merit of a commander. As he marched without order or precaution along the Æmilian way, an ambuscade of Franks suddenly rose from the amphitheatre of Parma; his troops were surprised and routed; but their leader refused to fly, declaring to the last moment that death was less terrible than the angry countenance of Narses.[81] The death of Fulcaris, and the retreat of the surviving chiefs, decided the fluctuating and rebellious temper of the Goths; they flew to the standard of their deliverers, and admitted them into the cities which still resisted the arms of the Roman general. The conqueror of Italy opened a free passage to the irresistible torrent of Barbarians. They passed under the walls of Cesena, and answered by threats and reproaches the advice of Aligern[82] that the Gothic treasures could no longer repay the labour of an invasion. Two thousand Franks were destroyed

[Leutharis]

[78] There is some difficulty in connecting the 35th chapter of the ivth book of the Gothic war of Procopius with the first book of the history of Agathias. We must now relinquish a statesman and soldier, to attend the footsteps of a poet and rhetorician (l. i. p. 11; l. ii. p. 51, edit. Louvre). [Procopius ends in March, and Agathias begins in April with the 27th year of Justinian.]

[79] [Theudebald had succeeded Theudebert in A.D. 548.]

[80] Among the fabulous exploits of Buccelin, he discomfited and slew Belisarius, subdued Italy and *Sicily*, &c. See in the historians of France, Gregory of Tours (tom. ii. l. iii. c. 32, p. 203), and Aimoin (tom. iii. l. ii. de Gestis Francorum, c. 23, p. 59).

[81] [Agathias says, the speech of Narses.]

[82] [Who after the capitulation of Cumæ was appointed governor of Cesena.]

by the skill and valour of Narses himself, who sallied from Rimini at the head of three hundred horse, to chastise the licentious rapine of their march. On the confines of Samnium the two brothers divided their forces. With the right wing, Buccelin assumed the spoil of Campania, Lucania, and Bruttium; with the left, Lothaire accepted the plunder of Apulia and Calabria. They followed the coast of the Mediterranean and the Hadriatic, as far as Rhegium and Otranto, and the extreme lands of Italy were the term of their destructive progress. The Franks, who were Christians and Catholics, contented themselves with simple pillage and occasional murder. But the churches, which their piety had spared, were stripped by the sacrilegious hands of the Alemanni, who sacrificed horses' heads to their native deities of the woods and rivers;[83] they melted or profaned the consecrated vessels, and the ruins of shrines and altars were stained with the blood of the faithful. Buccelin was actuated by ambition, and Lothaire by avarice. The former aspired to restore the Gothic kingdom; the latter, after a promise to his brother of speedy succours, returned by the same road to deposit his treasure beyond the Alps. The strength of their armies was already wasted by the change of climate and contagion of disease; the Germans revelled in the vintage of Italy; and their own intemperance avenged in some degree the miseries of a defenceless people.

Defeat of the Franks and Alamanni by Narses. A.D. 554

At the entrance of the spring, the Imperial troops, who had guarded the cities, assembled to the number of eighteen thousand men, in the neighbourhood of Rome. Their winter hours had not been consumed in idleness. By the command, and after the example, of Narses they repeated each day their military exercise on foot and on horseback, accustomed their ear to obey the sound of the trumpet, and practised the steps and evolutions of the Pyrrhic dance. From the straits of Sicily, Buccelin, with thirty thousand Franks and Alemanni, slowly moved towards Capua, occupied with a wooden tower the bridge of Casilinum,[84] covered his right by the stream of the Vulturnus, and secured the rest of his encampment by a rampart of sharp stakes and a circle of waggons, whose wheels

[83] Agathias notices their superstition in a philosophic tone (l. i. p. 18 [c. F.]). At Zug, in Switzerland, idolatry still prevailed in the year 613: St. Columban and St. Gall were the Apostles of that rude country; and the latter founded an hermitage, which has swelled into an ecclesiastical principality and a populous city, the seat of freedom and commerce.

[84] [Casilinum, on the Vulturnus, is the modern Capua; the ancient Capua, about 3 miles distant, is now S. Maria di Capua Vetere.]

were buried in the earth. He impatiently expected the return of Lothaire; ignorant, alas! that his brother could never return, and that the chief and his army had been swept away by a [Garda] strange disease [85] on the banks of the lake Benacus, between Trent and Verona. The banners of Narses soon approached the Vulturnus, and the eyes of Italy were anxiously fixed on the event of this final contest. Perhaps the talents of the Roman general were most conspicuous in the calm operations which precede the tumult of a battle. His skilful movements intercepted the subsistence of the Barbarian, deprived him of the advantage of the bridge and river, and, in the choice of the ground and moment of action, reduced him to comply with the inclination of his enemy. On the morning of the important day, when the ranks were already formed, a servant, for some trivial fault, was killed by his master, one of the leaders of the Heruli. The justice or passion of Narses was awakened: he summoned the offender to his presence, and, without listening to his excuses, gave the signal to the minister of death. If the cruel master had not infringed the laws of his nation, this arbitrary execution was not less unjust than it appears to have been imprudent. The Heruli felt the indignity; they halted; but the Roman general, without soothing their rage or expecting their resolution, called aloud, as the trumpets sounded, that, unless they hastened to occupy their place, they would lose the honour of the victory. His troops were disposed [86] in a long front, the cavalry on the wings; in the centre, the heavy-armed foot; the archers and slingers in the rear. The Germans advanced in a sharp-pointed column, of the form of a triangle or solid wedge. They pierced the feeble centre of Narses, who received them with a smile into the fatal snare and directed his wings of cavalry insensibly to wheel on their flanks and encompass their rear. The host of the Franks and Alamanni consisted of infantry: a sword and buckler hung by their side, and they used as their weapons of offence a weighty hatchet and a hooked javelin, which were only formidable in close combat or at a short distance. The flower of the Roman archers on horseback,

[85] See the death of Lothaire in Agathias (l. ii. p. 38 [c. 3]), and Paul Warnefrid, surnamed Diaconus (l. ii. c. 3 [*leg.* 2], 775). The Greek makes him rave and tear his flesh. He had plundered churches. [Leuthar's troops had previously been surprised and defeated near Fano.]

[86] Père Daniel (Hist. de la Milice Françoise, tom. i. p. 17-21) has exhibited a fanciful representation of this battle, somewhat in the manner of the Chevalier Folard, the once famous editor of Polybius, who fashioned to his own habits and opinions all the military operations of antiquity.

and in complete armour, skirmished without peril round this immoveable phalanx; supplied by active speed the deficiency of number; and aimed their arrows against a crowd of Barbarians, who, instead of a cuirass and helmet, were covered by a loose garment of fur or linen. They paused, they trembled, their ranks were confounded, and in the decisive moment the Heruli, preferring glory to revenge, charged with rapid violence the head of the column. Their leader, Sindbal, and Aligern, the Gothic prince, deserved the prize of superior valour; and their example incited the victorious troops to achieve with swords and spears the destruction of the enemy. Buccelin and the greatest part of his army perished on the field of battle, in the waters of the Vulturnus, or by the hands of the enraged peasants; but it may seem incredible that a victory,[87] which no more than five of the Alamanni survived, could be purchased with the loss of fourscore Romans. Seven thousand Goths, the relics of the war, defended the fortress of Campsa till the ensuing spring; and every messenger of Narses announced the reduction of the Italian cities, whose names were corrupted by the ignorance or vanity of the Greeks.[88] After the battle of Casilinum, Narses entered the capital; the arms and treasures of the Goths, the Franks, and the Alamanni, were displayed; his soldiers, with garlands in their hands, chanted the praises of the conqueror; and Rome, for the last time, beheld the semblance of a triumph.

Settlement of Italy. A.D. 554-568

After a reign of sixty years, the throne of the Gothic kings was filled by the Exarchs of Ravenna, the representatives in peace and war of the emperor of the Romans. Their jurisdiction was soon reduced to the limits of a narrow province; but Narses himself, the first and most powerful of the Exarchs,[89] administered above fifteen years the entire kingdom of Italy. Like Belisarius, he had deserved the honours of envy, calumny, and disgrace; but the favourite eunuch still enjoyed the confidence of Justinian, or the leader of a victorious army awed

[87] Agathias (l. ii. p. 47 [c. 10]) has produced a Greek epigram of six lines on this victory of Narses, which is favourably compared to the battles of Marathon and Platæa. The chief difference is indeed in their consequences—so trivial in the former instance—so permanent and glorious in the latter.

[88] The Beroia and Brincas of Theophanes or his transcriber (p. 201) must be read or understood Verona and Brixia. [This notice of Theophanes is taken from Malalas, p. 492, ed. Bonn. The news reached Constantinople in November, A.D. 562.]

[89] [The title of Narses was merely Patricius. Smaragdus was (so far as our evidence shows) the first governor who bore the name exarch. See below, Appendix 19.]

and repressed the ingratitude of a timid court. Yet it was not by weak and mischievous indulgence that Narses secured the attachment of his troops. Forgetful of the past and regardless of the future, they abused the present hour of prosperity and peace. The cities of Italy resounded with the noise of drinking and dancing; the spoils of victory were wasted in sensual pleasures; and nothing (says Agathias) remained, unless to exchange their shields and helmets for the soft lute and the capacious hogshead.[90] In a manly oration not unworthy of a Roman censor, the eunuch reproved these disorderly vices, which sullied their fame and endangered their safety. The soldiers blushed and obeyed; discipline was confirmed, the fortifications were restored; a *duke* was stationed for the defence and military command of each of the principal cities;[91] and the eye of Narses pervaded the ample prospect from Calabria to the Alps. The remains of the Gothic nation evacuated the country or mingled with the people; the Franks, instead of revenging the death of Buccelin, abandoned, without a struggle, their Italian conquests; and the rebellious Sindbal, chief of the
[A.D. 565] Heruli, was subdued, taken, and hung on a lofty gallows by the inflexible justice of the Exarch.[92] The civil state of Italy, after the agitation of a long tempest, was fixed by a pragmatic sanction, which the emperor promulgated at the request of the pope. Justinian introduced his own jurisprudence into the schools and tribunals of the West; he ratified the acts of Theodoric and his immediate successors; but every deed was rescinded and abolished, which force had extorted, or fear had subscribed, under the usurpation of Totila. A moderate theory was framed to reconcile the rights of property with the safety of prescription, the claims of the state with the poverty of the people, and the pardon of offences with the interest of virtue and order of society. Under the Exarchs of Ravenna, Rome was degraded to the second rank. Yet the senators were

[90] Ἐλείπετο γὰρ οἶμαι, αὐτοῖς ὑπὸ ἀβελτερίας τὰς ἀσπίδας τυχὸν καὶ τὰ κράνη ἀμφορέως οἴνου ἢ καὶ βαρβίτου ἀποδόσθαι (Agathias, l. ii. p. 48 [c. 11]). In the first scene of Richard III. our English poet has beautifully enlarged on this idea, for which, however, he was not indebted to the Byzantine historian.

[91] Maffei has proved (Verona Illustrata, P. i. l. x. p. 257, 289), against the common opinion, that the dukes of Italy were instituted before the conquest of the Lombards by Narses himself. In the Pragmatic Sanction (No. 23), Justinian restrains the judices militares. [For the duces or magistri militum in Italy, see below, vol. v., Appendix.]

[92] See Paulus Diaconus, l. iii. c. 2, p. 776. [See Marius Aventicensis, in Chron. Min. 2, p. 238, A.D. 566.] Menander (in Excerpt. Legat. p. 133 [fr. 8, ed. Müller]) mentions some risings in Italy by the Franks, and Theophanes (p. 201) hints at some Gothic rebellions.

gratified by the permission of visiting their estates in Italy, and of approaching without obstacle the throne of Constantinople; the regulation of weights and measures was delegated to the pope and senate; and the salaries of lawyers and physicians, of orators and grammarians, were destined to preserve or rekindle the light of science in the ancient capital. Justinian might dictate benevolent edicts,[93] and Narses might second his wishes by the restoration of cities and more especially of churches. But the power of kings is most effectual to destroy; and the twenty years of the Gothic war had consummated the distress and depopulation of Italy. As early as the fourth campaign, under the discipline of Belisarius himself, fifty thousand labourers died of hunger[94] in the narrow region of Picenum;[95] and a strict interpretation of the evidence of Procopius would swell the loss of Italy above the total sum of her present inhabitants.[96]

Invasion of the Bulgarians [Cotrigurs]. A.D. 559 [558-9]

I desire to believe, but I dare not affirm, that Belisarius sincerely rejoiced in the triumph of Narses. Yet the consciousness of his own exploits might teach him to esteem without jealousy the merit of a rival; and the repose of the aged[97] warrior was crowned by a last victory which saved the emperor and the capital. The Barbarians who annually visited the provinces of Europe were less discouraged by some accidental defeats than they were excited by the double hope of spoil and of subsidy. In the thirty-second winter of Justinian's reign, the Danube was deeply frozen: Zabergan led the cavalry

[93] The Pragmatic Sanction of Justinian, which restores and regulates the civil state of Italy, consists of xxvii. articles: it is dated August 15, A.D. 554; is addressed to Narses, V. J. Præpositus Sacri Cubiculi, and to Antiochus, Præfectus Prætorio Italiæ; and has been preserved by Julian Antecessor, and in the Corpus Juris Civilis, after the novels and edicts of Justinian, Justin, and Tiberius. [Novel 164, ed. Zachariä.]

[94] A still greater number was consumed by famine in the southern provinces ἐκτὸς the Ionian gulf. Acorns were used in the place of bread. Procopius had seen a deserted orphan suckled by a she-goat. Seventeen passengers were lodged, murdered, and eaten by two women, who were detected and slain by the eighteenth, &c.

[95] Quinta regio Piceni est; quondam uberrimæ multitudinis, cccIx. millia Picentium in fidem P. R. venere (Plin. Hist. Natur. iii. 18). In the time of Vespasian, this ancient population was already diminished.

[96] Perhaps fifteen or sixteen millions. Procopius (Anecdot. c. 18) computes that Africa lost five millions, that Italy was thrice as extensive, and that the depopulation was in a larger proportion. But his reckoning is inflamed by passion, and clouded with uncertainty.

[97] [His age can hardly have exceeded 55 years, in A.D. 559; for he was στρατήγης in A.D. 526.]

of the Bulgarians,[98] and his standard was followed by a promiscuous multitude of Sclavonians. The savage chief passed, without opposition, the river and the mountains, spread his troops over Macedonia and Thrace, and advanced with no more than seven thousand horse to the long walls which should have defended the territory of Constantinople. But the works of man are impotent against the assaults of nature: a recent earthquake had shaken the foundations of the wall; and the forces of the empire were employed on the distant frontiers of Italy, Africa, and Persia. The seven *schools*,[99] or companies, of the guards or domestic troops had been augmented to the number of five thousand five hundred men, whose ordinary station was in the peaceful cities of Asia. But the places of the brave Armenians were insensibly supplied by lazy citizens, who purchased an exemption from the duties of civil life, without being exposed to the dangers of military service. Of such soldiers, few could be tempted to sally from the gates; and none could be persuaded to remain in the field, unless they wanted strength and speed to escape from the Bulgarians. The report of the fugitives exaggerated the numbers and fierceness of an enemy who had polluted holy virgins and abandoned new-born infants to the dogs and vultures; a crowd of rustics, imploring food and protection, increased the consternation of the city; and the tents of Zabergan were pitched at the distance of twenty miles,[100] on the banks of a small river, which encircles Melanthias, and afterwards falls into the Propontis.[101] Justinian trembled; and those who had only seen the emperor in his old age were pleased to suppose that he had *lost* the alacrity and vigour of his youth. By his command the vessels of gold and silver were removed from the churches in the neighbourhood, and even the suburbs, of Constantinople; the

[98] [The Cotrigurs, see Appendix 15.]

[99] In the decay of these military schools, the satire of Procopius (Anecdot. c. 24. Aleman. p. 102, 103) is confirmed and illustrated by Agathias (l. v. p. 159 [c. 15]), who cannot be rejected as an hostile witness.

[100] The distance from Constantinople to Melanthias, Villa Cæsariana (Ammian. Marcellin. xxx. [*leg.* xxxi.] 11), is variously fixed at 102 or 140 stadia (Suidas, tom. ii. p. 522, 523; Agathias, l. v. p. 158 [c. 14]), or xviii. or xix. miles (Itineraria, p. 138, 230, 323, 332, and Wesseling's Observations). The first xii. miles, as far as Rhegium, were paved by Justinian, who built a bridge over a morass or gullet between a lake and the sea (Procop. de Ædif. l. iv. c. 8). [Melantias (Buyuk Tschekmadge, "Great Bridge") is 18 miles from Constantinople on the road to Hadrianople.]

[101] The Atyras (Pompon. Mela, l. ii. c. 2, p. 169, edit. Voss.). At the river's mouth, a town or castle of the same name was fortified by Justinian (Procop. de Ædif. l. iv. c. 2; Itinerar. p. 570, and Wesseling).

ramparts were lined with trembling spectators; the golden gate was crowded with useless generals and tribunes, and the senate shared the fatigues and the apprehensions of the populace.

Last victory of Belisarius

But the eyes of the prince and people were directed to a feeble veteran, who was compelled by the public danger to resume the armour in which he had entered Carthage and defended Rome. The horses of the royal stables, of private citizens, and even of the circus, were hastily collected; the emulation of the old and young was roused by the name of Belisarius, and his first encampment was in the presence of a victorious enemy. His prudence, and the labour of the friendly peasants, secured, with a ditch and rampart, the repose of the night; innumerable fires and clouds of dust were artfully contrived to magnify the opinion of his strength; his soldiers suddenly passed from despondency to presumption; and, while ten thousand voices demanded the battle, Belisarius dissembled his knowledge that in the hour of trial he must depend on the firmness of three hundred veterans. The next morning the Bulgarian cavalry advanced to the charge. But they heard the shouts of multitudes, they beheld the arms and discipline of the front; they were assaulted on the flanks by two ambuscades which rose from the woods; their foremost warriors fell by the hand of the aged hero and his guards; and the swiftness of their evolutions was rendered useless by the close attack and rapid pursuit of the Romans. In this action (so speedy was their flight) the Bulgarians lost only four hundred horse; but Constantinople was saved; and Zabergan, who felt the hand of a master, withdrew to a respectful distance. But his friends were numerous in the council of the emperor, and Belisarius obeyed with reluctance the commands of envy and Justinian, which forbade him to achieve the deliverance of his country. On his return to the city, the people, still conscious of their danger, accompanied his triumph with acclamations of joy and gratitude, which were imputed as a crime to the victorious general. But, when he entered the palace, the courtiers were silent, and the emperor, after a cold and thankless embrace, dismissed him to mingle with the train of slaves. Yet so deep was the impression of his glory on the minds of men that Justinian, in the seventy-seventh year of his age, was encouraged to advance near forty miles from the capital, and to inspect in person the restoration of the long wall. The Bulgarians wasted the summer in the plains of Thrace; but they

were inclined to peace by the failure of their rash attempts on Greece and the Chersonesus. A menace of killing their prisoners quickened the payment of heavy ransoms; and the departure of Zabergan was hastened by the report that double-prowed vessels were built on the Danube to intercept his passage. The danger was soon forgotten; and a vain question, whether their sovereign had shewn more wisdom or weakness, amused the idleness of the city.[102]

His disgrace and death. A.D. 561

About two years after the last victory of Belisarius, the emperor returned from a Thracian journey of health, or business, or devotion. Justinian was afflicted by a pain in his head; and his private entry countenanced the rumour of his death. Before the third hour of the day, the bakers' shops were plundered of their bread, the houses were shut, and every citizen, with hope or terror, prepared for the impending tumult. The senators themselves, fearful and suspicious, were convened at the ninth hour; and the præfect received their commands to visit every quarter of the city, and proclaim a general illumination for the recovery of the emperor's health. The ferment subsided; but every accident betrayed the impotence of the government and the factious temper of the people; the guards were disposed to mutiny as often as their quarters were changed or their pay was withheld; the frequent calamities of fires and earthquakes afforded the opportunities of disorder; the disputes of the blues and greens, of the orthodox and heretics, degenerated into bloody battles; and in the presence of the Persian ambassador Justinian blushed for himself and for his subjects. Capricious pardon and arbitrary punishment embittered the irksomeness and discontent of a long reign; a conspiracy was formed in the palace; and, unless we are deceived by the names of Marcellus and Sergius,[103] the most virtuous and the most profligate of the courtiers were associated in the same designs. They had fixed the time of the execution; their rank gave them access to the royal banquet; and their black slaves[104] were stationed in the vestibule and porticos, to

[102] The Bulgarian war and the last victory of Belisarius are imperfectly represented in the prolix declamation of Agathias (l. v. p. 154-174 [c. 11-25]) and the dry Chronicle of Theophanes (p. 197, 198 [A.M. 6051]).

[103] [This Sergius must be distinguished from the magister militum whom the Cotrigurs captured.]

[104] Ἰνδούς. They could scarcely be real Indians; and the Æthiopians, sometimes known by that name, were never used by the ancients as guards or followers; they were the trifling, though costly, objects of female and royal luxury (Terent. Eunuch. act i. scene ii. Sueton. in August. c. 83, with a good note of Casaubon in Caligulâ, c. 57).

announce the death of the tyrant and to excite a sedition in the capital. But the indiscretion of an accomplice saved the poor remnant of the days of Justinian. The conspirators were detected and seized, with daggers hidden under their garments: Marcellus died by his own hand, and Sergius was dragged from the sanctuary.[105] Pressed by remorse or tempted by the hopes of safety, he accused two officers of the household of Belisarius; and torture forced them to declare that they had acted according to the secret instructions of their patron.[106] Posterity will not hastily believe that an hero, who, in the vigour of life, had disdained the fairest offers of ambition and revenge, should stoop to the murder of his prince, whom he could not long expect to survive. His followers were impatient to fly; but flight must have been supported by rebellion, and he had lived enough for nature and for glory. Belisarius appeared before the council with less fear than indignation; after forty years' service, the emperor had prejudged his guilt; and injustice was sanctified by the presence and authority of the patriarch. The life of Belisarius was graciously spared; but his fortunes were sequestered, and from December to July he was guarded as a prisoner in his own palace. At length his innocence was acknowledged; his freedom and honours were restored; and death, which might be hastened by resentment and grief, removed him from the world about eight months after his deliverance. The name of Belisarius can never die; but, instead of the funeral, the monuments, the statues, so justly due to his memory, I only read that his treasures, the spoils of the Goths and Vandals, were immediately confiscated by the emperor. Some decent portion was reserved, however, for the use of his widow; and, as Antonina had much to repent, she devoted the last remains of her life and fortune to the foundation of a convent.[107] Such is the simple and genuine narrative of the fall of Belisarius and the ingratitude of Justinian.[108] That he

A.D. 563, Dec. 5

A.D. 564, July 19

A.D. 565, March 13

[105] The [*? leg.* this] Sergius (Vandal. l. ii. c. 21, 22; Anecdot. c. 5) and Marcellus (Goth. l. iii. c. 32) are mentioned by Procopius. See Theophanes, p. 197, 201 [A.M. 6051, 6055].

[106] Alemannus (p. 3) quotes an old Byzantine Ms. which has been printed in the Imperium Orientale of Banduri.

[107] [For the last days of Antonina, the source is the anonymous Antiq. Const., in Banduri, Imp. Or. i. p. 37.]

[108] Of the disgrace and restoration of Belisarius, the genuine original record is preserved in the fragment of John Malala (tom. ii. p. 234-[*leg.* 239]243 [493-5]) and the exact Chronicle of Theophanes (p. 194-204 [A.M. 6055]). Cedrenus (Compend. p. 387, 388) and Zonaras (tom. ii. l. xiv. p. 69 [c. 9]) seem to hesitate between the obsolete truth and the growing falsehood. [The statement of Zonaras shows no sign of the growing falsehood.]

was deprived of his eyes, and reduced by envy to beg his bread, "Give a penny to Belisarius the general!" is a fiction of later times,[109] which has obtained credit, or rather favour, as a strange example of the vicissitudes of fortune.[110]

Death and character of Justinian. A.D. 565, Nov. 14

If the emperor could rejoice in the death of Belisarius, he enjoyed the base satisfaction only eight months, the last period of a reign of thirty-eight and a life of eight-three years. It would be difficult to trace the character of a prince who is not the most conspicuous object of his own times; but the confessions of an enemy may be received as the safest evidence of his virtues. The resemblance of Justinian to the bust of Domitian is maliciously urged;[111] with the acknowledgment, however, of a well-proportioned figure, a ruddy complexion,

[109] The source of this idle fable may be derived from a miscellaneous work of the xiith century, the Chiliads of John Tzetzes, a monk (Basil, 1546, ad calcem Lycophront, Colon. Allobrog. 1614 in Corp. Poet. Græc.). [Tzetzes was not a monk.] He relates the blindness and beggary of Belisarius in ten vulgar or political verses (Chiliad iii. No. 88, 339-348, in Corp. Poet. Græc. tom. ii. p. 311).

Ἔκπωμα ξύλινον κρατῶν ἐβόα τῷ μιλίῳ
Βελισαρίῳ ὀβολὸν δότε τῷ στρατηλάτῃ
Ὃν τύχη μὲν ἐδόξασεν, ἀποτυφλοῖ δ' ὁ φθόνος.

This moral or romantic tale was imported into Italy with the language and manuscripts of Greece; repeated before the end of the xvth century by Crinitus, Pontanus, and Volaterranus; attacked by Alciat, for the honour of the law; and defended by Baronius (A.D. 561, No. 2, &c.) for the honour of the church. Yet Tzetzes himself had read in *other* chronicles that Belisarius did not lose his sight and that he recovered his fame and fortunes. [The myth appears earlier than Tzetzes in the Πάτρια τῆς πόλεως, which goes under the name of Codinus (ed. Bonn, p. 29) and was compiled in the time of Basil II. It was wrought into a political romance in the 14th or 15th century, and we possess it in three forms, of which the oldest is published by Wagner in his Mediæval Greek Texts (in unrhymed political verses); the second, by the Rhodian poet Georgillas (printed by A. Giles at Oxford, 1643), breaks into rhyme near the end (Georgillas represents the transition from rhymeless to rhymed verses); the third in rhyme (printed at Venice in 1548). See Krumbacher, Gesch. der byz. Litteratur, ed. 2, p. 825-7. It should be noted that John of Cappadocia ended his days in beggary (Procopius, B. P. i. 23). But more important for the origin of the Belisarius legend (as Finlay pointed out) is the story of Symbatios, in the ninth century. Blinded of one eye, he was placed in front of the palace of Lausus, with a plate on his knees, as a beggar, and in this plight displayed to the public for three days. See George Mon., p. 834 (ed. Bonn); Finlay, Hist. of Greece, vol. i. App. 2, and vol. ii. p. 194.]

[110] The statue in the villa Borghese at Rome, in a sitting posture, with an open hand, which is vulgarly given to Belisarius, may be ascribed with more dignity to Augustus in the act of propitiating Nemesis (Winckelman, Hist. de l'Art, tom. iii. p. 266). Ex nocturno visu etiam stipem, quotannis, die certo, emendicabat a populo, cavam manum asses porrigentibus præbens (Sueton. in August. c. 91, with an excellent note of Casaubon). [The statue is now in the Louvre.]

[111] The *rubor* of Domitian is stigmatized, quaintly enough, by the pen of Tacitus (in Vit. Agricol. c. 45); and has been likewise noticed by the younger Pliny (Panegyr. c. 48), and Suetonius (in Domitian. c. 18, and Casaubon ad locum). Procopius (Anecdot. c. 8) foolishly believes that only *one* bust of Domitian had reached the vith century.

and a pleasing countenance. The emperor was easy of access, patient of hearing, courteous and affable in discourse, and a master of the angry passions, which rage with such destructive violence in the breast of a despot. Procopius praises his temper, to reproach him with calm and deliberate cruelty; but, in the conspiracies which attacked his authority and person, a more candid judge will approve the justice or admire the clemency of Justinian. He excelled in the private virtues of chastity and temperance; but the impartial love of beauty would have been less mischievous than his conjugal tenderness for Theodora; and his abstemious diet was regulated, not by the prudence of a philosopher, but the superstition of a monk. His repasts were short and frugal: on solemn fasts, he contented himself with water and vegetables; and such was his strength, as well as fervour, that he frequently passed two days and as many nights without tasting any food. The measure of his sleep was not less rigorous: after the repose of a single hour, the body was awakened by the soul, and, to the astonishment of his chamberlains, Justinian walked or studied till the morning light. Such restless application prolonged his time for the acquisition of knowledge[112] and the dispatch of business; and he might seriously deserve the reproach of confounding, by minute and preposterous diligence, the general order of his administration. The emperor professed himself a musician and architect, a poet and philosopher, a lawyer and theologian; and, if he failed in the enterprise of reconciling the Christian sects, the review of the Roman jurisprudence is a noble monument of his spirit and industry. In the government of the empire, he was less wise or less successful; the age was unfortunate; the people was oppressed and discontented; Theodora abused her power; a succession of bad ministers disgraced his judgment; and Justinian was neither beloved in his life nor regretted at his death. The love of fame was deeply implanted in his breast, but he condescended to the poor ambition of titles, honours, and contemporary praise; and, while he laboured to fix the admiration, he forfeited the esteem and affection, of the Romans. The design of the African and Italian wars was boldly conceived and executed; and his penetration discovered the talents of Belisarius in the camp, of

[112] The studies and science of Justinian are attested by the confession (Anecdot. c. 8, 13), still more than by the praises (Gothic. l. iii. c. 31, de Ædific. l. i. Proem. c. 7) of Procopius. Consult the copious index of Alemannus, and read the Life of Justinian by Ludewig (p. 135-142).

Narses in the palace. But the name of the emperor is eclipsed by the names of his victorious generals; and Belisarius still lives, to upbraid the envy and ingratitude of his sovereign. The partial favour of mankind applauds the genius of a conqueror, who leads and directs his subjects in the exercise of arms. The characters of Philip the Second and of Justinian are distinguished by the cold ambition which delights in war and declines the dangers of the field. Yet a colossal statue of bronze represented the emperor on horseback, preparing to march against the Persians in the habit and armour of Achilles. In the great square before the church of St. Sophia, this monument was raised on a brass column and a stone pedestal of seven steps; and the pillar of Theodosius, which weighed seven thousand four hundred pounds of silver, was removed from the same place by the avarice and vanity of Justinian. Future princes were more just or indulgent to *his* memory; the elder Andronicus, in the beginning of the fourteenth century, repaired and beautified his equestrian statue; since the fall of the empire, it has been melted into cannon by the victorious Turks.[113]

I shall conclude this chapter with the comets, the earthquakes, and the plague, which astonished or afflicted the age of Justinian.

Comets. A.D. 531-539

[A.D. 530] I. In the fifth year of his reign, and in the month of September, a comet[114] was seen during twenty days in the western quarter of the heavens, and which shot its rays into the north. Eight years afterwards, while the sun was in Capricorn, another comet appeared to follow in the Sagittary: the size was gradually increasing; the head was in the east, the tail in the west, and it remained visible above forty days. The nations who gazed with astonishment, expected wars and calamities from the baleful influence; and these expectations were abundantly fulfilled. The astronomers dissembled their ignorance of the nature of these blazing stars, which they affected to represent as the floating meteors of the air; and few among them

[113] See in the C. P. Christiana of Ducange (l. i. c. 24, No. 1) a chain of original testimonies, from Procopius in the vith, to Gyllius in the xvith, century. [For a drawing of the statue, made in A.D. 1340, in a Ms. in the library of the Seraglio, see Mordtmann, *Constantinople*, p. 65; and for an inscription which may belong to it, *ib.*, p. 55.]

[114] The first comet is mentioned by John Malala (tom. ii. p. 190, 219 [454, 477, ed. Bonn]) and Theophanes (p. 154 [A.M. 6023]); the second by Procopius (Persic. l. ii. c. 4). Yet I strongly suspect their identity. The paleness of the sun (Vandal. l. c. ii. 14) is applied by Theophanes (p. 158) to a different year [A.M. 6024 = A.D. 531-2].

embraced the simple notion of Seneca and the Chaldæans, that they are only planets of a longer period and more eccentric motion.[115] Time and science have justified the conjectures and predictions of the Roman sage; the telescope has opened new worlds to the eyes of astronomers;[116] and, in the narrow space of history and fable, one and the same comet is already found to have revisited the earth in *seven* equal revolutions of five hundred and seventy-five years. The *first*,[117] which ascends beyond the Christian era one thousand seven hundred and sixty-seven years, is coeval with Ogyges the father of Grecian antiquity. And this appearance explains the tradition which Varro has preserved, that under his reign the planet Venus changed her colour, size, figure, and course: a prodigy without example either in past or succeeding ages.[118] The *second* visit, in the year eleven hundred and ninety-three, is darkly implied in the fable of Electra the seventh of the Pleiads, who have been reduced to six since the time of the Trojan war. That nymph, the wife of Dardanus, was unable to support the ruin of her country; she abandoned the dances of her sister orbs, fled from the zodiac to the north pole, and obtained, from her dishevelled locks, the name of the *comet*. The *third* period expires in the year six hundred and eighteen, a date that exactly agrees with the tremendous comet of the Sibyll, and perhaps of Pliny, which arose in the west two generations before the reign of Cyrus. The *fourth* apparition, forty-four years before the birth of Christ, is of all others the most splendid and important. After the death of Cæsar, a long-haired star was conspicuous to Rome and to the nations, during the games which were exhibited by young Octavian in honour of Venus and his uncle. The vulgar opinion, that it conveyed to heaven the divine soul of the dictator, was cherished and consecrated

[115] Seneca's viith book of Natural Questions displays, in the theory of comets, a philosophic mind. Yet should we not too candidly confound a vague prediction, a veniet tempus, &c. with the merit of real discoveries.

[116] Astronomers may study Newton and Halley. I draw my humble science from the article COMETE, in the French Encyclopédie, by M. d'Alembert. [See App. 20.]

[117] Whiston, the honest, pious, visionary Whiston, had fancied, for the æra of Noah's flood (2242 years before Christ), a prior apparition of the same comet which drowned the earth with its tail.

[118] A Dissertation of Fréret (Mémoires de l'Académie des Inscriptions, tom. x. p. 357-377) affords an happy union of philosophy and erudition. The phænomenon in the time of Ogyges was preserved by Varro (apud Augustin. de Civitate Dei, xxi. 8), who quotes Castor, Dion of Naples, and Adrastus of Cyzicus—nobiles mathematici. The two subsequent periods are preserved by the Greek mythologists and the spurious books of Sibylline verses.

by the piety of a statesman; while his secret superstition referred the comet to the glory of his own times.[119] The *fifth* visit has been already ascribed to the fifth year of Justinian, which coincides with the five hundred and thirty-first of the Christian æra. And it may deserve notice that in this, as in the preceding, instance the comet was followed, though at a longer interval, by a remarkable paleness of the sun. The *sixth* return, in the year eleven hundred and six, is recorded by the chronicles of Europe and China; and in the first fervour of the Crusades, the Christians and the Mahometans might surmise, with equal reason, that it portended the destruction of the Infidels. The *seventh* phænomenon of one thousand six hundred and eighty was presented to the eyes of an enlightened age.[120] The philosophy of Bayle dispelled a prejudice which Milton's muse had so recently adorned, that the comet "from its horrid hair shakes pestilence and war".[121] Its road in the heavens [Flamsteed] was observed with exquisite skill by Flamstead and Cassini; and the mathematical science of Bernoulli, Newton, and Halley, investigated the laws of its revolutions. At the *eighth* period, in the year two thousand two hundred and fifty-five, their calculations may perhaps be verified by the astronomers of some future capital in the Siberian or American wilderness.

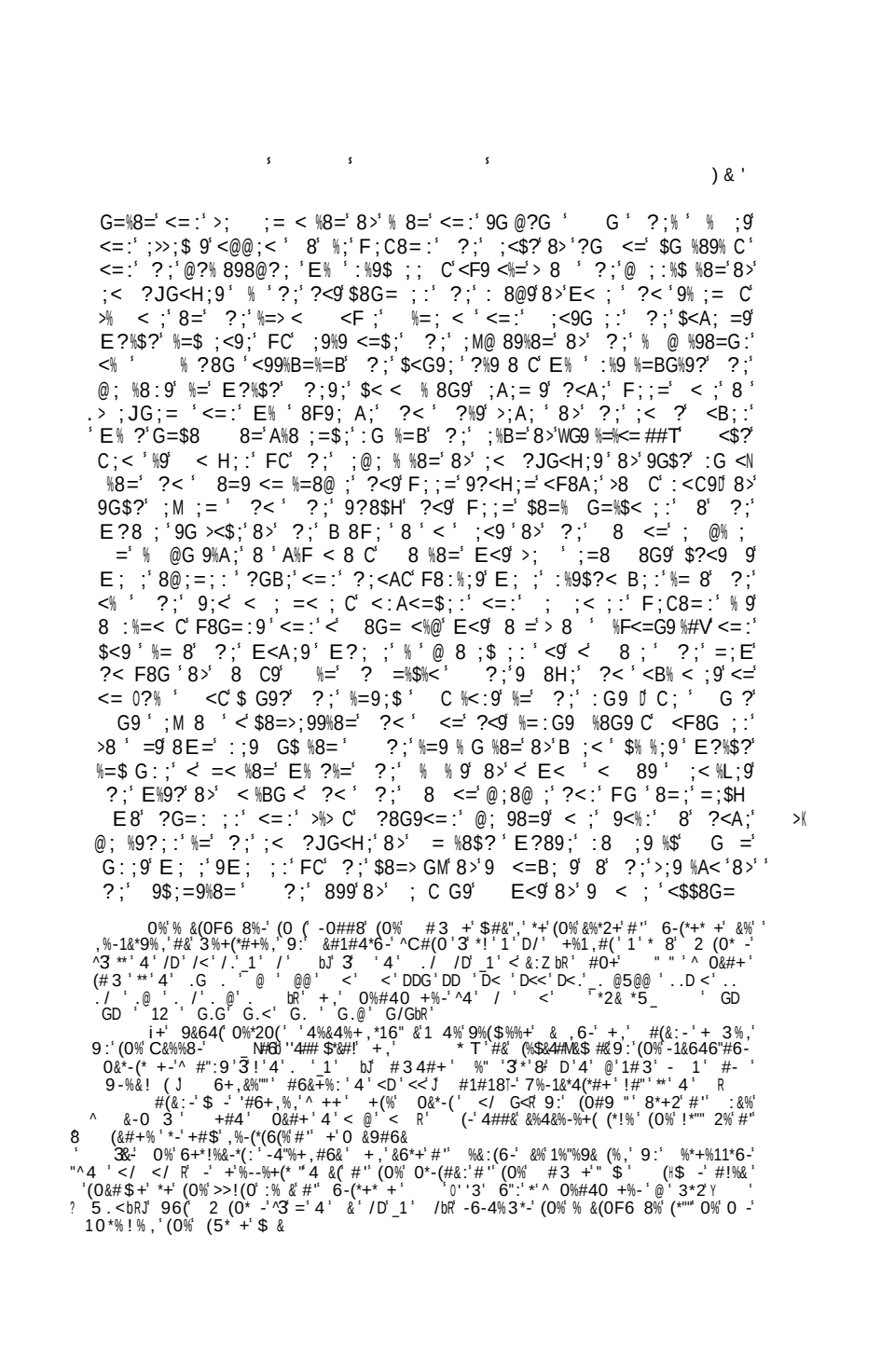
Earthquakes II. The near approach of a comet may injure or destroy the globe which we inhabit; but the changes on its surface have been hitherto produced by the action of volcanoes and earthquakes.[122] The nature of the soil may indicate the countries most exposed to these formidable concussions, since they are caused by subterraneous fires, and such fires are kindled by the

[119] Pliny (Hist. Nat. ii. 23) has transcribed the original memorial of Augustus. Mairan, in his most ingenious letters to the P. Parennin, missionary in China, removes the games and the comet of September, from the year 44 to the year 43, before the Christian æra; but I am not totally subdued by the criticism of the astronomer (Opuscules, p. 275-351).

[120] This last comet was visible in the month of December, 1680. Bayle, who began his Pensées sur le Comète in January 1681 (Oeuvres, tom. iii.), was forced to argue that a *supernatural* comet would have confirmed the ancients in their idolatry. Bernoulli (see his *Eloge*, in Fontenelle, tom. v. p. 99) was forced to allow that the tail, though not the head, was a *sign* of the wrath of God.

[121] Paradise Lost was published in the year 1667; and the famous lines (l. ii. 708, &c.), which startled the licenser, may allude to the recent comet of 1664, observed by Cassini at Rome in the presence of queen Christina (Fontenelle in his *Eloge*, tom. v. p. 338). Had Charles II. betrayed any symptoms of curiosity or fear?

[122] For the cause of earthquakes, see Buffon (tom. i. p. 502-536. Supplément à l'Hist. Naturelle, tom. v. p. 382-390, edition in 4to), Valmont de Bomare (Dictionnaire d'Histoire Naturelle, *Tremblemens de Terre, Pyrites*), Watson (Chemical Essays, tom. i. p. 181-209). [R. Mallet, The First Principles of Observational Seismology, 1862.]



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E% ? %=:%9$ % %=< ; <B; <=: <=C 8> ?89; E?8 ;9$<@;: E; ;
:;@ %A;: 8> ?; G9; 8> ?;% 9@;;$? E% ?8G F;%=B 9;$G ; > 8 ,
< ; G =8> ?; :%98 :; 1T ?; @?C9%$%<=9 8> 8=9 <= %=8@ ;
E; ;L;< 8G9 <=:9H% >G FG ?;% < E<9 FC>;: FC ?;A< %8G9
9C @ 8 9 <=: @; %=<$%8G9 A;?; ;=$; 8> ?; :%9;<9; ?;
9< ; ; ;:%;9 E; ; @ 8:G$ %A; 8> $8= < C ;>>;$ 9 <=: ?;
;A;= $<@ %$%8G9 C :%9<@@8%= ;: ?;% @ 8B=89 %$9 8>:;< ? 8
;$8A; C ?;8 :; 8>>G=; < 9 <=: ?; %B? 8>9;@G $? ;9 E; ;
$8=>8G=:; ?89; E?8 E; ; ;> E% ?8G > %;=:9 8 9; A<= 9
<C G=FG %;:%= ?; 9 ;; 9 8 %= ?;% :;98 < ; ?8G9;9 <=: <
<B%9 < ; E<9 <G ?8 %9;: 8 $8 ;$?; @ 8 %9$G8G9 ?;<@9
8>:;<: F8:%;9 8 <=9@8 ?; FC <=: 8 E< ; <=: 8
%= ; ?; %= :;;@ @% 9 F;C8=: ?;@ ;$%=$ 9 8> ?; $% C
?;% 8E= :<=B; <=: ?;@ 89@;$ 8>@GF %$:%9 ;99 <E<H;=;:
98 ; ; 8 9;%= ?; %=:9 8> ?; 89 A%$%8G9 8> <=H%=:D
?; $8=>%:;=$; 8> ?;< ? <B<%= ;A%A;: ?;% @<99%8=9 <=:
?<F% 9 FG @?% 898@?C G9 :%9:<%= ?; 8F9; A< %8= 8> 8N
$8@%G9 ?< ?; %A;9 8> 9G$? ;= E; ; BG< :;: FC ?;
@;$G %< ><A8G 8> >8 G=;8 @ 8A%:;=$; ; >8 B8 8 @; N
?<@9 ?; 9;$; C ;$8 ;$;: ?< ?;@ <BG; ?<: 8G$?;: ?;
@; 98= 8> WG9 %=%<= ?% 9; > FG ?; <F9 ; %8G9 :%; 8> ?;
; @; 8 <C 9GBB;9 <9 %= ?; $<9; 8> 8$ < ;9 < 8 ; < %8=<
<=:?8=8G <F ; $<G9; >8 ?%9 ;$8A; C 1#T G %=B ?%9 9%$H=;99
?; @GF %$ $8=9 ; =< %8= E<9 ;M@ ;99;: %= ?; ?<F% 9 8> ?;

3 061:,*,%-^1 / R '*&3-(0 (%*+%1(*#+1#6", +":9%#+1% (8%+ 96(
! 2&*6-$0# 0 ,'' 3*":%>4%&*%+1%#"(0% 4" 26%'#9-%&!%-(0 (-#3% 4%&-#+-$0#
0 ,%-1 4%,(0% '*&-(-6-8 6+,%& (0% -%1#+, ((18J +,(0*-&%4%(*(*+ *-1#+0
'*&3%,9:A 9*6- "*"""*+6-^4 / R #9-%&!%(0 (#+(0*-0% ,40:-*1* +- &%
,*!*,%,J +,(0%+ (6&% +,#4%& (*#+#"(0% ,*-% -%3 :+#("$:-9%-*3*1*&

3 ($ -(06-(0 (#1& (%-0 ,9%%+- !%,9:0*-(%3 4%& +1% *+ (0% 4" 26%)
#" (0%+-^ 6" C%""*6- #1(((*1 *)*R 7& % , 11#6+(- '#& (0% 4 6"* <=
- "69&*(:#" &%"*2*#6- 0#6-%- 9:(0% ($# ,! +(2%-#"-#1"6-*#6 +, 9-(*+%+#
4 3*R

<=: ;A%A;:D FG % E<9 =8 % ?;:;=:8><$<< % 8G9@; %8:8><%> C0 E8C;<9 ?< <=H%=: ;$8A; ;: ?;% ?;< ?8 ?;:<% ;9G ;:%9 @G ;:<=:9<GF %8G9 JG<%C 8 ><$9 ?<A;:F;;=@ ;9; A;: 8 9G9 <%=<=<$$8G=#8 ;A;=<$8=I;$G ;8> ?;:=G F;9 ?<@; %9?;:%=?%9 ;M <8 :%=<C 8 <%C 8= C>%=: ?< :G %=B ? ;; 8= ?9 >%A;<=:< ;=B ? ;=?8G9<%%:@; 98=9 :%;:;<$?:<C< 8=9 <= %=8@ ;D ?< <=C$% %;9 8> ?; <9 E; ; ;> A<$<= D <=: ?< %=9;A; < :%9 %$ 9 8> < C ?;?< A;9 <=: ?;A%= <B;E% ?; ;: 8= ?;B 8G=: ?; %@ ;$9$8G B;8>E< @;9 % ;=$; <=:>< %=; <>> %$;: ?;9GFI;$ 9 8> WG9 %=%<=<=: ?%9 ;%B=%9 :%9B <$;: FC <A%9%F ;::$;<9;8> ?;?G <=9@;$%;9 E?%$?<9=;A; F;;= ;@<% ;:%=98 ;8> ?;><% ;9 $8G= %;9 8> ?;B 8F; ###

'(%&-#3%'*26&%-#'&0%(#&*1'(0%- +,-#''(0%-% E1' &#1#4*6-^ +%1,#(1'* ((%34(- 3#&%,%'*+*(% 11#6+((0 (>!4* - E 9 I = 0 , 9%%+%>(%&3*+ (%,'6+,%&(0%&%*2+'#'' (0% 34%&* , %3#+ 0%%>4&%--*#+'*-'#9-16&%*+'2& 3 3 &', &*(03%(*15 +, '*(%& +*+(%&4&%((*#+' $#6",'4&#,61%-%!%& 3*''''*#+-'#''3*''''*#+- "%3 ++6-'^4' # +,' #6-*+'^(#3'***'4' @ (& +-" (%'(0*-4 -- 2%'P ($#06+,&%,'3*''''*#+-f'J 96(3'*2+#& +(#''(0%*&3#(*!%- ''$%',&#4(0%''1!4(! (0%&%3 *+*+2 >!4('*$ + Q 3:&* ,'#''3:&* ,-'$#6",'6&+*-0 +%06+,&%,'3*''''*#+- '+6 3 9%&'+#($0#'''':'*+ , 3*--*9"%' 0%'+6 3 9%&'+' &#1#4*6-*-'46&%":'*3 2*+ &: 4 +10%+8# *+' = @ ' ' '**'4'< a

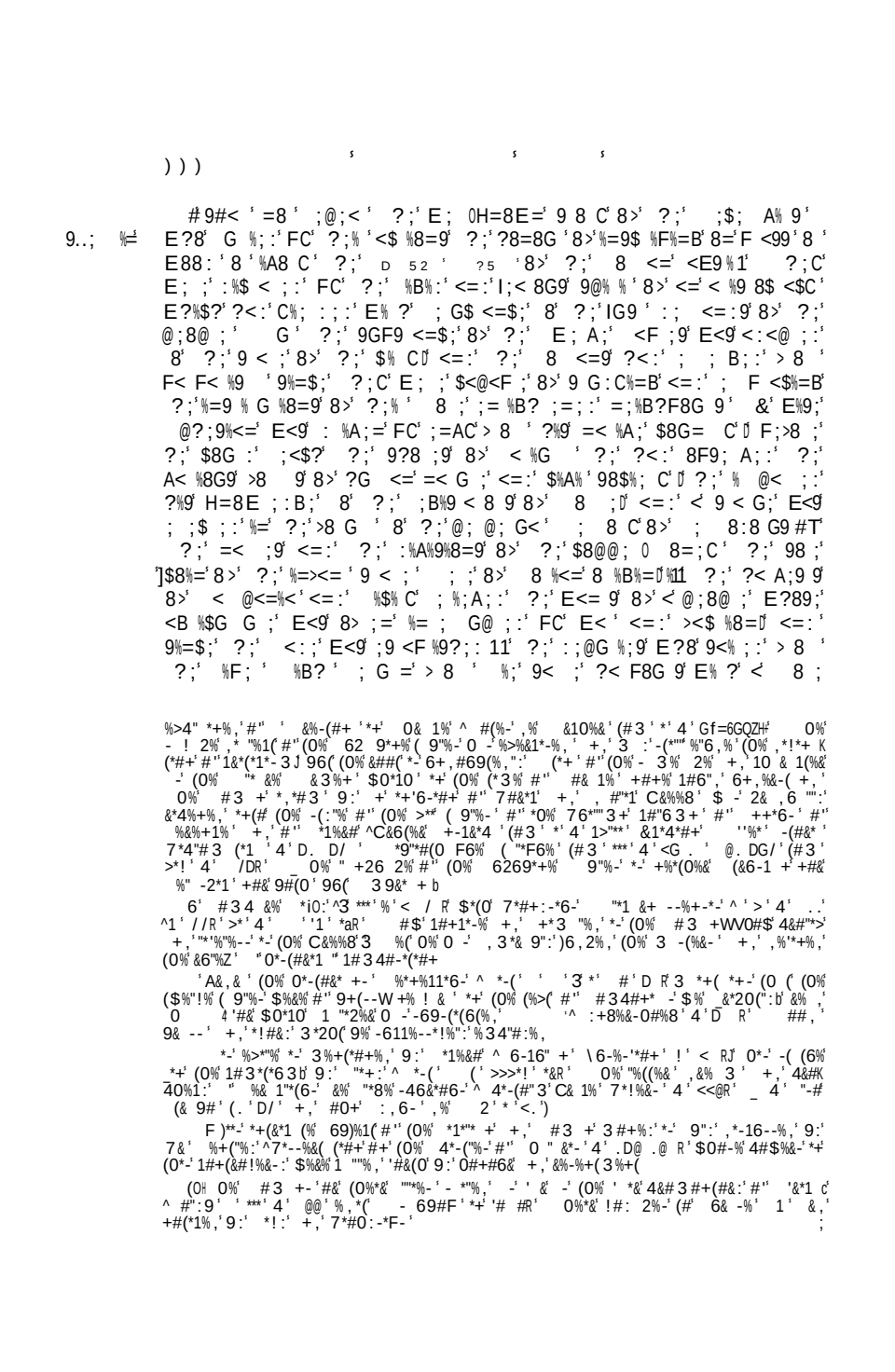
% %8=Ď ?;ʻ $?< <$; ʻ 8ʾ WG9 %=%<=ʻ ?<9ʿ F; ;=ʻ ;M@89; :ʻ 8ʿ ?;ʻ F %=:ʻ A; ?; 9<; =$;ʻ 8ʾ>ʻ> < ; Cʿ<=:ʻ %=A; $ %A;ʻ Ď <=:ʻ ?;ʻ %=IG9 %$;ʻ 8ʾ<ʻ 9; $ ʻ R ?;ʻ & Ů , Mʾ ?<9ʿ ;>G9; :ʻ< ʻ @ <%9;ʻ <=:ʻ ; % ʻ 8ʿ ?;ʻ @ %=$; ʻ ?%9ʿ %=%9 ; 9ʾ<=:ʻ ?%9ʿ <E9 1ʾ <$?; :ʻ 8ʿ =8ʿ@< Cʻ %= ; ;9 ; :ʻ 8= Cʻ >8 ʻ ?;ʻ G ?ʾ <=:ʻ $<=:8G ʻ 8>ʾ ?%9 8 Cʻ <=:ʻ :%N ;$; :ʻ FCʻ ?;ʻ 89 ʻ ; @; < ;ʻ <=:ʻ 9H% >G ʻ BG%:;9 1ʾ ʻ ;= ; ʻ E% ?ʾ IG9 ʻ :%>>%:;=$;ʻ 8?ʾ ?;ʻ 9GFI;$ ʻ 8>ʾ $%A% ʻ <E ʻ E ?%$?ʾ ?<9ʿ ;MN ?<G9 ;:ʻ 98ʿ <=Cʻ ;< =;:ʻ %A;9ʿ <=:ʻ $ 8 ?;:ʻ ?;ʻ < 9ʿ 8>ʾ 9G$?ʾ 9@<$%8G9ʿ %F < %;9ʻ =ʻ <ʾ 9%=B ;ʻ %>ʾ @899%F ;ʻ %=ʻ <ʾ 9?8 ʻ $?<@ ;ʻ ʻ 9?< ʻ <$;ʻ ?;ʻ 8 <=ʻ IG %9@ G:;=$;ʻ > 8 ʻ 8 G G9ʿ 8ʿ WG9N %=%<= 1ʾ <@@ ;$%< ;ʻ ?;ʻ <F8G 9ʿ 8>ʾ ?< ʻ ; @; 8 ʻ <=:ʻ @<G9;ʻ 8ʿ $8= ; @ < ;ʻ ?;ʻ @ %=$%@ ;9ʿ 8>ʾ <ʾ 9$%;=$;ʻ 98ʿ % @8 <= ʻ 8ʿ ?;ʻ @;<$;ʻ <=:ʻ ?<aO@%=;9ʿ >ʾ98$%; Cʻ ?;ʻ <E9ʿ 8>ʾ<ʾ =< %8=ʻ >8 ʻ ?;ʻ 89 ʻ %=9 G$ %A;ʻ @8 %8=ʻ 8>ʾ % 9ʿ ?%9 8 Cď <=:ʻ < ?8GB?ʾ ʻ ?<A;ʻ :;A8 ;:ʻ C9; >ʾ 8ʿ E % ;ʻ ?;ʻ <==<9ʿ 8>ʾ<ʾ:;$ %=%=Bʾ 8=< $?Cʻ ʻ 9?< ʻ ; F <$;ʻ ?;ʻ 8$$<9%8=ʻ 8ʿ F ;< ?;ʻ ?;ʻ@G ;ʻ <=:ʻ %=A%B8 < %=Bʾ <% ʻ ʻ ?;ʻ ;@GF %$

98> ?; ?;ʻ @ % % %A;ʻ B8A; = ;= ʻ 8>ʾ 8 ;ʻ Ť E<9ʿ $8 @89;:ʻ E% ?ʾ
D%%#,8> 98 ;ʻ@8 % %$<ʻ 9H% ʻ 8>ʾ<=ʻ ; ;$ %A;ʻ H%=Bʾ<ʾ$8G=$% ʻ 8>ʾ=8F ;9ʻ<=:ʻ <ʾB;=; <ʾ<99; F Cʻ 8>ʾ ?;ʻ @;8@ ;ʻ <ʾ<=:ʻ ;%B%8=ʻ E; ;ʻ<:0ʻ %=%9 ; ;:ʻ FCʻ ?;ʻ 9G@ ;ʻ <B%9 <;ʻ Ď <=:ʻ ?;ʻ< 8=;ʻ @ 8@89;:ʻ ?;ʻ <E9ʻ E?%$?ʾ E; ;ʻ:;F< ;:ʻ%=ʻ ?;ʻ 9;=< ;ʻ <=:ʻ>%=< Cʻ <%>%;:ʻ 8ʻ ;I;$;:ʻ FCʻ<ʾ <I8 % Cʻ8>ʾ A8 ;9ʿ%=ʻ ?;ʻ ?% Cʻ$% %<;ʻ8ʻ @< %9?;9ʿ 8>ʾ ?#ʾ $% Cʻ 8 G Gbʻ G <ʾ<=:ʻ ; A%G9ʿ G %G9ʿ <;ʻ $; ;0

-ʾA& +1*-ʾ #((#3 +ʾ ʻ'% &+%,ʾ +,ʾ 16(%" $:%&ʾ#ʻʻ(0%$>!*(0ʻ1%+(6&:ʻ $*-0%,ʻ(#
3##&(*ʻ:ʾ 6) 1*6- 6,ʻ(M4"% -%(0% 0 +1%""#&ʾ,% T ,4*("ʾ *-ʾ +(* &*9#+* +6-ʾ
($0*10ʻ ʻ 3!% +%!%&ʾ 0%%+ʾ 9"%ʻ (#ʾ4&(5&%Rʾ -ʾ469"*-0%,ʻ*+ʾA&%+10ʾ*+ʾ G ʻJ +,ʾ
0*-ʾ-%1(ʻ$ -ʾ4&#4 2 (%,ʻ*+ʾC%&4& +:ʻ^ %*+%F%*6-ʻ 4 44ʻ(#3ʻ***ʾ-:""#2%***ʾ4ʾ @

3"&$0 ?O ((0% 0% ,ʾ #ʻʻ(0%-% 26*,%-ʾ ʻ 0 "" &%-4%1('6"":ʾ4" 1% (0% "% &+%,ʾ +,ʾ4% &ʾ -4*#6(" ʾ %(%%11*6-ʻ ʻC%&3 +ʾ4&#'%--#&ʾ$0#ʾ,*&ʻʻ (ʾ """%*+ʾ (0%:% &ʾ @.ʻ^-%%
0(-ʾ "#2%*+ʾ(0% #6!%""%ʾ *9"#(0'%F6% C%&3 +*F6%ʻ(M23ʻ**ʾ4ʻ/ .Rʾ *-ʾ 34"%
$#&8-ʾ0 !%9%%+ʾ1#""%1(%,'*+ʾ*%20(!#"6 3%-'*+ʾ. G'C%+%!ʻ @.< @. ʻ 0%ʾ(&% (*-%-ʾ
$0*10ʻ30 !%ʾ-%4 &(,:ʾ6-%,ʾ &%ʻ&ʾ *-(#&*ʻ 6&*-ʾ #3 ((" %(C%3* +*1*ʾ 62,ʻ
(!ʾ @.Gʾ *+ʾ Qʾ ɨ :+(23ʻ +(*F6*((63ʾ #3 + 3ʾ +&*-4&6,%+(* 3ʾ
""6-(& +(*63ʻDʾ F"-ʾ*+ʾ kʾ &)%1(ʾ ,ʾ 0%+63ʻ <ʾ "%3%+(ʻ 6&*-ʾ *!*""*-ʾ-%16+K
,63ʾ &,*+%3ʾ +,ʾ (*(6(*#+63ʻ962,ʾ (ʾ @/0ʻ*+ʾ Pʾ .ʾ "%3%+(ʻ ʻ ʾ -%16+,63ʾ
&,*+%3ʾ +, +*3ʻ &)% (ʾ @@Dʻ0ɨ PʾDʻ!#"-ʾ 3#+2(0% +63%&#6-ʾ$#8&-ʾ#+ʾ
#3 +ʾ $ʾ$0*10ʻ0 !% 44% &%,ʾ-*+1%(0%1" --*1 "0*-(#&%-ʾ#ʻʻ !*2+:ʾ^C%-10ʻ,%-ʾ
&03ʾ %10(-ʾ*3ʾ *((%" *(%&Rʾ +,ʾ "("(%&ʾ^C%-%O ʻ,%-ʾ& 3ʾ %10(-R ʻ(0%%>1%""%+(ʾ. IDʾ
ʾ ʾ '#ʻʾ 11 &* ^*+ʻDʾ!15-ʾ.(0%,ʾ R3 :ʾ9% 4%1* ""-:ʾ3%+(*#+%,b
S 6&ʾ #&*2*+ ʻ (%>(ʾ*-ʾ ʻ'& 23%+(ʾ,%ʾ &*2*+% 6&*-ʾ^ +,%1(ʾ8ʾ*ʾ (*(ʾ *VR #ʻʻ
#3)5+(6-ʾ ʻ #3 +ʾ" $:%&ʾ$0# "*!%,ʾ 6+,%&(0% +(#+*+6-ʾ^ %*+%11ʾ(#3ʾ***ʾ
-:""ʾ***ʾ4ʾ Rʾ (0 -ʾ9%%+ʾ 9&*,2%,ʾ +,ʾ4&#9 9":ʾ1#&&64(%,ʾ9:ʾ &*9#+* +ʾ
+,ʾ -*+1% &%-(#&%,ʾ9:ʾ :+8%&-0#%8ʾ^ 44ʾ(#"((ʾ*ʾ4ʾD@ <G.R
(ʾ 0%ʾ19+-(*(6(*#+ ʻ 0*-(#&:ʾ#ʻʻ (0% 8*+2-ʾ#ʻʻ #3%ʾ3 :ʾ9%ʾ-(6,*%,ʾ*+ʾ (0% ʻ*&-(
9##8ʾ#ʻʻ *!:ʻ +,ʾ3#&%ʾ1#4*#6-":ʾ8Q 4*#+:-*6-ʾ "*1 &+ --%+-*ʾ^ʾ**ʾ4ʾ G gʾ
0 <Gʾ_%ʾ. ʾ ʻ*&ʾ4ʾ D ʾ_mɨ *-&22 bRʾ $0#ʾ -#(&(%(*& %-ʾ 9%(& :-
(0%10 & 1(%&#ʾ ʾ &0%(#&(1* +ʾ +,ʾ ʾC&%%8

)))



@ ;$%8G9' $< B8' 8>' @8 % %$< ' E%9:8 ' ?;' $8 8=%;9' 8 >' 6 ;< ' 6 ;;$,' ?<:' <=9@8 ;:' <=:' % @ 8A;:' ?;' < 9' 8>' ?;% ' 8 ?; 0' $@G= C' G T' <=:' ?;B%G ' 8 8=<' <=:' < ;= G% %' B %0' B;= G ' <=:' C <$G9;' E ;' %=' ?;' <=H' 8>' ?;' 89 ' > 8G %9?%=B' $% %;9' ?;' :%9$%@ ;9' 8>' C ?<B8 <9' <@@ %;:' @?% 898@?C' 8' ?;' G9;' 8>' B8A; = ;= D ?;' %E % ;=' <E9' 8>' ?< 8=:<9' <$$;@ ;:' ?;' <%:' 8>' @8; C' <=:' G9%$4 <=:' `< ;G$G9' > < ;:' ?;' ;N @GF %$' 8>' ?;' 8$ %<=9' E?%$?' 9 88:' E% ?8G ' < ; < %8=' <F8A;' E8' ?G=: ;:' C;< 9 ## 8 ' <' 9% % < ' 8 %A;' 8>' =< %8=<' @ %:;' F8 ?' %AC' <=:' %8=C9%G9' < ;' E% %=B' 8' F; %;A;' ?< ' ?;' : ;@G %;9' 8>' 8 ;' A%9% ;:' ?;=9' G=:;' ?;' E%9;' <=:' 9@ ;=:%:' <: %=%9N < %8=' 8>' ; %$;9D <=:' ?;' <E9' 8>' 8 8=' E; ;' <=9> 9;:' %= -' ?;' E ; A;' <F ;9' >' 9G$?' <=' ; F<99C' ?<:' %=:;:' F;;=' ;N $;%A;:' > 8 ' ?;' F< F< %<=9' 8>' ;9@; %<' ?;' 8 <=' =< ;' E8G :' ?<A;' F;;=' >< % %<' 8' ?;' 6 ;;H9' F;>8 ;' ?;' ;%B=' 8>' ;M<=:; D <=:' ?;' ><%= ;9 ' ;A%:;=$;' E8G :' ?<A;' F;;=' ;MN @ 8 ;:' <=:' $; ;F < ;:' FC' ?;' $G %89% C' 8>' 9G$$;;:%=B' % ;9' G ' ?;' ?;=%<=' 8=G ;= 9' < ;' 9% ;= D =8 ' E% ' % ' 9;; ' $;:%F ;' ?< ' ?;' @< %$%<=9' 9?8G :' G=:; <H;' <' 8=B' < :' @; % 8G9' =<A%B< %8=' 8' $8@C' ?;' @G ;9 ' 8:;' 8>' <' :; 8$ <$C ' =' ?;' $8 @< %98=' 8>' ?;' <F ;9' 8>' 8 8=' E% ?' ?89;' 8>' ?;' ;$; A% 9' 98 ;' $<9G< ' ;9; F <=$;' <C' F;' >8G=:D 98 ;' G ;9' E?%$?' =< G ;' <=:' ;<98=' ?<A;' ;A;< ;:' 8' ;A; C' 98$%; C' I' 98 ;

TT 0*-' 1*&163-(+1% $#6",' "#+%' 4&#!% (0% +(*F6*(:' #'' 0 &#+, -' (0%,%5-' " (#&'#'' 0%2*63' +,' (+ ' $0#' 9:' '-(& +2% %&#&' #'' 7*#,#&6-' *#'"6-' ^(#3 ' *' ' >**' 4' . / . D_1' **bR' *-' 1%"%0& (%,' "#+2' '(%&$ &,-' -' (0% 6(0#&'#'(0% 4#"*1:' #'' 06&*63

Y "%616-' $0#-%' %>*-(%+1% 0 -' 9%%+' & -0":' ((18%,' 0 ,' (0% 3%&*(' +,' 2"#&:' #''1#+!%&(*+2' '9 +,' #''#6(" $-' ^(0% #1&* +-R' *+(#' (0% 3#-(' !*&(6#6-' +,' &,%#":' #'(0% C&%%8' &%469"*1-' ^-%% ($# 3#*&%-' #'' (0% &#+',%' (' &#*>' -6&"' ' %2*-K " (*#+',%" 'C& +,%' C&(%%' J 3',%"T 1 ,%3*1'(#3' >"**' 4' D@ <<<R' 6((0% " $-' #'' Y "%616-' +,' 0 &#+, -' $0*10' *3 4#-%,' #+' 7*#,#&6-' +,' (#9 %6-' &%' (0% -46&*#6-' 1#34#-*(*#+' #'' ' :(0 2#&% +' -#40*-(' $0#-%'& 6,' 0 -' 9%%+',%(%1(%,' 9:'(0% 1&*(*1 '- 2 1*(:' #'' %+(":' ^4' &&' &!!R

(S' -%*[%(0% #44#&(6+*(:' #'' (& 1+2' (0% 4&#2&%-' #'' (0*-' + (*#+ '* +(%&1#6&-%U' * ' %&#,#(6-' +,' T 061:,*,%-' ^ C' <GG</GR' 44% &' *2+#& +(' #'' ('(% + 3% +,' %>*-(%+1% '' #3%^ #-%40' 1#+(& ' 4*#+' (#3' **' 3 *' %' D' 4' .5:%,*(' !%&' 1 34R' D' 0%#4#3 46-' ^ ' .G ' "*+' *+' R' 3%+(*#+-' (0% *+! -*#+' #'' (0% C 6"-' $0*10' *-' +#(1%,' *+' "##-%&(%&3-' 9:-' #+(*16-' ^ "*6(&10' *+' 3 **"#' 4' D D' %,*(' ' (%40 +' 1' bR' <' #+*%'&% '*#&' ' 96"#6-'%39 --:'#''(0% #3 +-(#' "%> +,%&' ^ '6 1' .<GR' *-' ((%-(%,' 9:' "*(&106-' ^ "*+' ***' R' 9:' &*-(6-' +,' -1"%4* ,%-' ^ &&* +' 3 !**' 4' D . 'D /' 1' /bR' +,' 9:' %3+#+' #'' %& 1"% '^ 46,' 0#(*63' 1#, ' 11>>*!' 4' @D/RJ' (0#620' (1*(":',%+*%,' 9:' *!:' .' 0%#40& -(6-' ^ 6 *' ..GR' 4&*36-' %>(%&+#&63' "*F6' ,%' #3 +*-' ,**2%+(*6-' -1& -*(' ^ "*+' ***' R' / ' a#1#40&#+' ' . G /GGR' -1 ((%&%,' (0% '*&-(' -%5' #'' ' &(+ +' 1#"#+:" + ,' (0% ' 9"%'#''(0% : +%*,'^ -- +,& ! DD D GRU' ?O

H' ' K%A\&K < <$8=9 H= @<;;' I <@W;A

& * =

9#",' 4&%,*1(*#+' 9%'#&%' (0% %+,'#''(0%' '*&-(' *'*1' &

8 ? ; $% C 2# ? ; ?8G9<= : F <99 @ < ; 9 ? ; <$ 9 8 ? ; 9 ; =< ; <= : @ ; 8@ ; E ; ; : ; @89% ; : = ? ; <@% 8 I Q T <= : 98 ; 8 ? ; <$ 9 <9 ? ; WG %<= <E <B<%=9 ; M 8 %8= 9G @<99 ; : ? ; =G F ; 8 <= ?G= : ; : $? < @ ; 9 ? ; ; $; A% 9 0 ? < : = ; B N ; $; : 8 % @8 ? ; 9<=$ %8= 8 ` < ; G$G9 E ?%$? 98 8=B <%= <%= ; : ? ; %= ; B % C 8 ?%9 ; @GF %$ 8$ %<= E ?8 @ 8@89 ; : <=C = ; E <E 9 88 : >8 ?= %= ? ; <99 ; F C 8 ? ; @ ; 8@ ; E % ? < $8 : 8G=: ?%9 = ; $H <= : %> ? ; <E E<9 ; I ; $; : ? ; %==8A< 8 E<9 %=9 <= C 9 <=B ; :

? ; ; $; A% 9 ?<: F ; ; = =< ; : <=: ? ; % <F ; 9 E ; ;%1E.8><%/ <@@ 8A ; : FC <=<99 ; F C 8 ? ; " %= E ?%$? %$? ; 9 @ ;0T m T11 @8= : ; < ; : <B<%=9 =G F ; 9 8 ? ; >% 9 $ <99 8 > 8 <=9 ? ; @ 8@ %; 8 9 8 > 8=; ? G=: ; : ?8G9<= : @8G= : 9 8 > $8@@ ; #= %= ; C0 ; %B? A8 ; 9 E ; ; <99%B=; : <=: 8= C =%=; C0>%A; E ; ; > >8 ? ; 9%M %=>; %8 $ <99 ; 9 : %9 %FG ; : <$$8 : %=B 8 ? ; % 9GF9 <=$; FC ? ; < >G @8 %$C 8 > ; A%G9 G ? ; %FG=; 9 988= ; 9 <F %9?; : < 8 ; 9@ ; $%8G9 <=: @8@G < <M% ? < ; A ; C $% %L ; = ? <9 . = ; JG < %B? 8 ; =<=$? ; <E9 E ?%$? ? ; % 9 F8G=: 8 8F ; C = 9 ; <: 8 > ? ; " ? ; C $8=A ; = ; : ? ; 0 4 <=: ? ; @< %$%<=9 <> ; <= % @8 ; = 9 GBB ; 9GF % ; : 8 ? ; : ; $; ; 9 8 > <= <99 ; F C %= E ?%$? ? ; % A8 ; 9 E ; $8=>8G= : ; : E% ? ?89 ; 8 > ? ; <; =;9 @ ; F ; %<=9 ; <9 8=B <9 ? ; %F ; 9 9G$$; 99%A ; C @<99 ; : 8A ; =< 8E 0 < = : B<A ; ? ; % A8%$; 9

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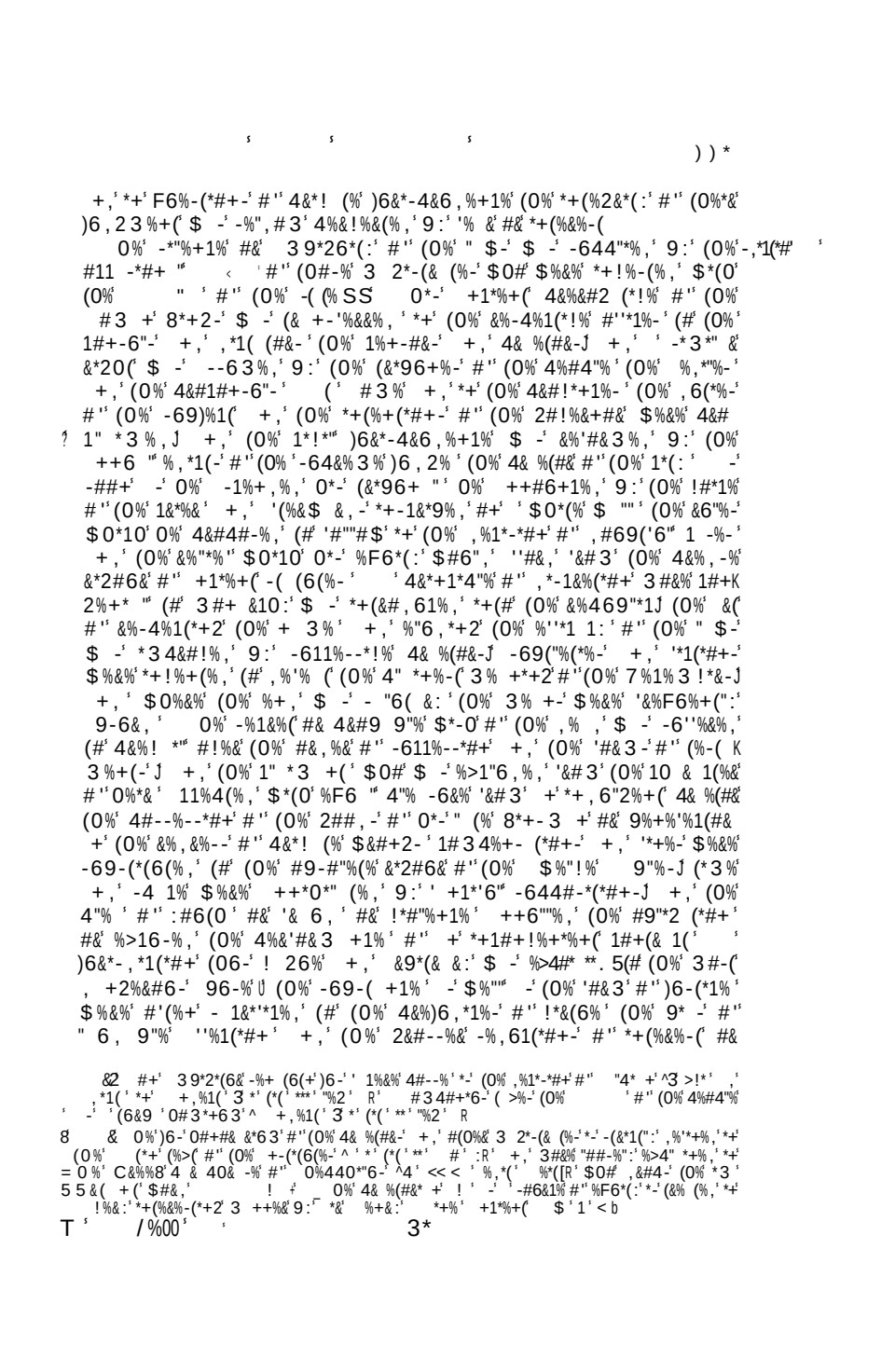

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*-'" $-' &%'(0%'*&-(' *+'(0%' #,%' %%'7#,$%"" ^ & %"%1(' 39,%+'4'
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!%&1 34R' %'4&#1%%,-'(#'4& *-%'(0%'&%1%+(' *&3+%--' #'' %!%&6-' $0# &%4% "%)
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1#+'*, %+1% 0% *+, %+(6&% #'1#!%+ +(- $ - 9&#8%+ -(& $J $%*20(- +, -1 "%- $%&% *+(&#, 61%, *+(#% !%&: 4 :9*%+(4 +, (0% 0%*& $0# 11%4(%, (%-(3%+($ - -#3%(*3%- #9"*2%, (#- + 4 0*- '*+2%&- (#1 -($: 0*- 2 &3%+(- +, (#"% 4 +, , +1% $*(0 &% "# #& '"%1(%, (& +-4#&(-# '1*(*[%+ 46&-6%, +: -(#"%+ 2##, - *+(# +%*209#6&T- 0#6-% 0% 1#+1% "%, 0*- + 8%, +%- - $*(0 '"*+%+ (#$%" +, 0*, 0*- ' 1% $*(0 3 -8 #& 9 -#+ "%-(0% -0#6", %+1#6+(%& (0% %: %- #' !*&2*+ #& 3 (&#+ + '1*!*" 1(*#+ (0% 4" *+(*'(#610%, (0% % &#'(0% $*(+%- -%*[%, 0*- &%"61(+(, !%&- &: 9: (0% +%18 +, *3K 4"#&%, *+ -#"%3+ " 3%+((*#+ (0% *, ' 0*- '%""#$ 1*(*[%+- 0% ($# 1#34%(*(#&- 2& -4%, % 10 #(0%&T- 0 +, - *'(0%: -(##, 4&%4 &%, '#& 1#39 (9%'#&% (0% (&*96+ "# #' (0% 4& %(#&0 0% 1#33 +, %, (0%3 (# 4&#, 61% (0% #9)%1(#' (0% , *-46(%J (0%: $%+((0%: &%(6&+%, $*(0 3% -6&%, -(%4- + , 1"#, #" % &(0 $ - 1 -((0*- '%%((#&%4&%-%+((0% '*%", '#& $0*10 (0%: 1#+(%+, %, 0*- #116"(-1*%+1% #' (0% $#&, - +, 1(*#+- #" " $ $ - (0% *+0%&*(+1% #' (0% 4#+('- +, 4 (&*1* +- *8% (0% 0 ", % + -(&#"#2%&- (0%: ++#6+1%, (# (0%*& 1"*%+(-(0% , :#'96-*+%- - +, &%4#-%J (0%-% *34#&(+((&*'"%- ' *+(%&K $#!%+ $*(0 (0% &%"*2*#+#' 63 J +, '(%& (0% 469"*1 (*#+ #' (0% $%"!% 9"%- (0% #3 +4%#4"% $ - -("" %+-" !%, 9: (0% *2+#& +1% #'), *1* " 4&#1%%, *+2- 0% (&% 10%&: #' -#3% 4"%9%* +#'1%&- ("%+2(0 &%!% "%, (0% 4&#'*(9"% 3 :-(%&: J *+ 3#&% %+"*20(%+%, 2% (0% "2 " 1(*#+- $%&% , %&*, %, + , #9-%&!%, J +, (0% - 3% +(*F6*(: $0*10 - +1(*'*%, (0% 4& 1(1% #9"*(%& (%, (0% 6-% +, 3% +*+2 #' (0*- 4&*3*(*!% " +26 2% S5

=;$. 9%8='8>' ?':A% ' <E% C; 9

3#&% "*9%& " &($ - 16"(*! (%, 0#$%!%& 9: (0% - 2%- #' #3 $0# ' *+ -(&*1(%& -%+-% 3 :9% 1#+-*, %&%, - (0% 6(0#&- #' (0% 1*!*" " $ 0% "(%& (*#+ #' (0% *, *#3 +, 3 ++%&- #' (0% #3 +- &%+, %&%, (0% -(:"% #' (0% $%"!% 9"%- "%--

*1%&# ^, % ''*1**- *** R 3 :-((% +' *, % " 1 -% 96(3 9&#-% ^, % ''*1*- *** 'DR 44% "- (# (0% 4& 1(*1% #'' 0*- #$+ (*3%- $0*10 0% 6+, %&-(##, - ' ;" $:%& +, 3 2*-(& (% ^ 106"(*+2 , "4* + A& 23%+(' (*(>>** # D 4 .< . .R _ 0*- *+(%&4&%((*#+ #' (0% 4 -- 2% #' *1%&# *-#9!*#6-": - "-% 0%&% *- +# %!*, %+1% (0 (-610 '#&3 - '#& 11%4(*+2 +' *+O%&*(+1% $%&% %!%& *+ 6-% b

0% '6&(63 " +1% "*1*#F6% 1#+1%4(63 $ -' +# "#+2% & +, %&-(##, ' *+ (0% (*3% #'' (0% +(#+*+%- ^ 6"6- C%""*6- >!* GR 0% ((*1 , %&*! (*#+ #'' %*+%11*6- ^ +(*F6*((' #3 '3 *! (*(' * #' < D R *- -644#&(%, 9: (0% %!*, %+1% #' &*-(#0 40 +%- ' 0*- -10#"* -(' +, ' #""6> ' _ %% C *6- ' ` ' 0% 3 % +*+2 #'' (0% L % *- F6*(% 6+1%& (*+ b

5 +' 0*- #& (*#+' '#& 6&%+ ' ^1' <R *1%&# (6&+- *+(# &*, *16"% (0% '#&3 - +, 3 :-(%&*%- #'' (0% 1*!*"* +- ' $0*10 &% &%4&%-%+(%, ' $*(0 3#&% 1 +, #6& 9: 6"6) C%""*6- ^ #1(((*1 >> GR C& !*+ '^4 44 ' 4 ' D / ' D ' D @R ' +, %*+%11*6 ' ^ +(*F6*((' 3 *! (*(' !* R

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8> ?; <E E ; ; <99G ; : 8> ;<A%=B :%9$%@ ;9 ; JG< 8 9G@; %8
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?; IG %9@ G: ;=$; E?%$? ?<: F; ;= B 899 C <: <@ ; : 8 ?;%?;% E<= 9 8> ?;>% 9 8 <=9 E<9 @8 %9?; : <=: % @ 8A; : %= ?; 9=E8 8 9;A;= ? $; = G C 8> ?; $% C FC ?; < %<=$; 8> 6 ;$%<= @?% 8N 98@?C ?; $<;A8 <9 ?<: F; ;= <GB? FC G9; <= : ; M@; %; =$; FG ; A%G9 G @%$%G9 E<9 ?; >% 9 $%A% %<= E?8 ;9 <F %9?; : ?%9 < 8=< $; <%= <=: B; =; < ?;8 C T# 8 ?; :%9$; = ;= 8> G ?<=: >< 9;?88: ?;<@@ %; : <9 <= %=>< %F ; G ; ?; 8B%$ 8> %9 8 ;<=: ?;9 8%$9 ; :G$; :@< %$G < $<9;9 8 B;=; < @ %=$%@ ;9 <=: :%>>G9; :8A; ?;9?<@; ;99 <99 ?; %B? 8> 8 : ; <=: ; 8JG;=$; %$; 8 ?%9 $8= ; @8 < C <=: > %;=: : ;$ %=; : ?; ;@G < %8= 8> <@ 8>;99; : <EC; D FG ?; IG %9N @ G: ;=$; 8> ?%9 $8G= C E<9 <:8 =; : FC ?%9 %=$8 @< <F ; B;=%G9 E?%$? $8=A; 9 %= 8 B8 : ;A; C 8FI;$?< % 8G$?;9 > ; ?; ;M< @ ; 8> < 8 ?; $8 @89; : < ;@GF %$ <=: >8 ?; G9; 8>?%9 ;@GF %$ < ;< %9; 8> <E9 %= E?%$? ?; <F8G 9 8 : ; : G$; > 8 < $; ;9 %< 8 %B%= ?; E%9:8 <=: IG9 %$; 8> ?; 8 <= $8=9 % G %8= ?; E?8 ; G=%A; 9; <$$8 :%=B 8 ?%9 9GF % ; ?C@8 ?;9%9 >8 9 8=; % ;=9; $8 8=E ;< ?D B8:90 <=: ;= E?8 @< %$%@< ; 8> ?; 9< ; ;99; =$; < ; ; F; 9 8> ?; 9< ; $8 G=% C ;<98= @ ;9$ %F; ?; <E 8> =< G ; <=: =< %8=9 <=: < @89% %A; %=9 % G %8=9 ?8E ;A; 8 :%>%; : FC <$$%: ; = 8 $G9 8 < ; : <E= > 8 ?; G ; 8> %B? E?%$? ?; ;% C ?<9 %=9$ %F; : 8= ;A; C A% G8G9 %= : 8 ?;9; @?% 898@?%$< C9 ; %;9 ?; % : C ;M$ G: ;9 ?; ; ;@ %$ E?8 ;>G9; 8 F; %; A; <=: ?; ; ;@%$G ;<=9 E?8 < ; G=E% %= B 8 <$?; < ; :%9 :<%= ?; $< ; 8> ?; ;@GF %$?; <: A%9; 9 ?; 8 9 G F; = ?;% 9?<: C B< : ;=9 G ?; ?G F C %= ;< 9 ?< ?; =; E $<: ; C E8G : F; 9% ; = 9%=$; ?; F8 : 8FI; $ %8=9 E8G : 88 988= : ;9 8C ?; ><% <=: E ; 08 : ; ; 9 G$ G ; 8>?%9 8> C 9C9 ; TT < 8 %9 8 ; <=: ` ;=8 ?; ;@ ;9; = 9 <9 ?; 8= C ;<$?; 9 E?8 < <=: %=9 G$ < $% %L ; = >8 ?; : G %; 9 8>

P & --6 #& (0% *1%&# 0*3 -%" 4&#4#-%- ^, % & (#&% * . D + *, % # (0% &(#& -1*%+1% #)6&*-4&6, %+1% $0*10 (0% %"#F6%+(96(*""*(%& (% +(#+*6- ^* / R '%1(-(# ,%&*, % ($ - 4 &(": %>%16(%, 9: %&!*6- 6"4*1*6- ^*+ &6(# 1 . R $0#-% 4& *-%- &% %"%2 +(": ! &*%, *+ (0% 1" --*1 (*+*(: # (0% #3 + C& !*+ ^4 GR

%&(6&9 (&*1%3 6(%3 #3 +*6 3 0 &6 3 &%&6 3 1 ,%3* 3 0 +1 9 &1%-*" %(3 % , % &%1%+(% 3 %># %3 6- 6(-*"% (+ 3 -* *+ !5%&*(*+ 9 %1 F6 % - (*- 1*(%*+ -(&61(%(1# 34#-*(!*, % +(6& +*3 *-%, %(&6*+ - F6 3 F6*, %3 %2# 4" 1 (% 164*# -69 3 #!%&% +# 6, %# ^, % %2*96- * <R A&# 3 (0*- 4 -- 2% "#+% %+("%: % 3 &8- #+ A&%% (0*+8*+2 4 D/G 3 *20(! %" % &+%, 0# $ *&3 ": *1%&# 9, *%!%, (0% -4%1*#6- , #1(&*+%- $0*10 0 - , #&+%,

) ' "

98$%< %>; > ?;9; ?; < 8G 8> ?; 9 8%$9 E<9 >8G=: 8 F; 8> ?; >% ;9 ; @; D <=: % E<9 $?%;> C E8 = F8 ? >8 G9; <=: 8 =< ;= %= ?; 9$?88 9 8> IG %9@ G:;=$; 8 ?; 8 %$8 ?; 8 <= $%A% %<=9 ;< =;: 8 %A; 8 ;<98= <=: 8 :%;D FG ?;C % F%F;: %= 98 ; :;B ;; ?; @ ;IG:%$;9 8> ?; 9;$ D ?; 8A; 8> @< <:8M ?; @; %=<$%8G9 ?<F% 9 8> :%9@G ; <=: < %=G ; < <$? ;= 8 E8 :9 <=: A; F< :%9 %=$ %8=9 ?; 9G@; %8 % C 8> 8 E<9 %= 8:G$;: 8 <9$; <%= ?; %B? 8> @ 8@; CD <=: ?; ;JG< % C 8> $ % ;9 %9 $8G= ;%D =<=$;: FC <= 8@%=%8= 8> ;F< %G9 T1 ?< ?; E?8 8G$?;9 ?; ;< 8G$?;9 ?; E?8 ; F8:CD <=: ?< ?; E?8 9 ;<9 > 8 <= ?;<@ 8> $8 = 8 <= ?8B9?;<: 8> E%=; %9 BG% C 8> ?; ;= % ; ?;> T11

G ?8 % C 9 ; 8JG;=$; <=: ?; 9 G:C 8> ?; $%A% <E @ 8 8 ;: < $% %L;= 8 ?; ?8=8G 9 8> ?; 8 <= 9 < ;D <=: ?; ? ;; @ 8>;99%8=9 E; ; 98 ; % ;9 8 ; $8=9@%$G8G9 FC ?;% G=%8= %= ?; 9< ; $?< <$; = ?; $8 @89% %8= 8> ?; ;:%$ < ;< =;: @ <; 8 B<A; < 9<=$ %8= <=: @ ;>; ;=$; 8 ?%9 @ %A< ; 9;= % ;= 9 D ?; 8@%=%8= 8> < $;=98 8 < $8=9G E<9 ;= ; <%=;: E% ? ;9@;$ D <=: < :8GF >G %= ; @ ; < %8= 8> ?; <E9 %B? F; 9G@@8 ;: FC ?; A% G;9 8 %G @?9 8> ?; $%A% %<= ?; @< %$%<= < 9 E; ; 8=B @ 8 ;$;: FC ?; A; 8> C9 ; C D <=: %= 8 ; ;=%B? ;=;: % ;9 ?; >;;:8 8> %=JG% C ;9 <F %9?;: ?; B;=; < @ %=$%@ ;9 8> IG %9@ G:;=$; GF ; <=: %= %$< ; $<9;9 E; ; G$%:< ;: FC ?; :%9@G ;9 8> ?; >8 G D G ;9 <M%8 9 <=: ;>%=% %8=9T1 E; ; <: % ;: <9 ?; B;=G%=; :%$N < ;9 8> ;<98=D <=: ?; $8=9;= 8> ?; ;B< @ 8>;998 9 E<9 %= ; E8A;= %= 8 ?; @ <$ %$; 8> ?; %FG=< 9 G ?;9; %= ; @ ; ; 9 $8G : =;% ?; ;=<$ =8 ;M;$G ; ?; <E9 8> ?; ;@GF %$D <=: ?; IG:B;9 %B? :%9 ;B< : ?; <G ?8 % C 8> ?; $<;A8 <9 ?; 9; A;9 E?%$? E<9 8> ;= 8A; ? 8E= FC ?;

0% -(#*1 40*"#-#40: 7 '*&-((620((#3%9: + 1(*6- (0% '&%+, #''(0% :#6+2%& 1*4*# ^-%% 0*- "*'% *+ (0% 3 ,% H 1 , 3*% ,%- +-1&*4(*#+- (#3 >'4 @/0 S

P - 0% *- F6#(%, 9: "4* + ^"%2 .G , 9*+6 3 *+ +,%1(3 >"!** (*(** "%2 D R %(&%9 (*6- '(%& 0% $ - '"% ,*+2 1*!*"* + F6# 3 ** 3 ,6>*(^ 11%,*(%(* 3 F6#, 3 ** 3 ,61*(*+ *6&% 1*! o P 0% *- ((0% (#4 #'' 0*- 4&#K -*#+ Ib 9%1 3% + %4*16&% + ^ *1%&# , A 3 !** /R %&0 4- 0% $ - +#(1#+-(+(#& -*+1%&% *+ 0*- +%$ -%1(

5 %% C& !*+ ^4 ./ / R +, (0% *+%''%1(6 " 1 !*"- #'' -1#6 %*+%11*63 ^ *-(' # D/R F6#(%- +, 44&#!%- ,*-%&((*#+ #'' !%& &, ((# ,% (#*1) 6&'(1#+-6"(#&63 0*"#-#40*1

-4 % 0 !% 0% &, #'' (0% '#+* + &6"% (0% F6*"* + -(*46" (*#+ +, (0 +*"* + '#&3- #'' D 3 >*3- +, #"D.@ ,%*+*(*#+- ^ +,%1(3 (*(>!5 >:**R H

%"#F6%+1% #& -#40*-(&: #' + *+2%+*#6- 4"% , %& 626-(6-
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-1*%+1% #' (0% 1*!*"* +- J +, (0%*& -%&!*"% " 9#6&- 11#3 3#K
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+,%& (0% ' *& 4&%(%+1% #' -%16&*+2 (0% ,*2+*(: #' (0% &((0%
4&*!*"%2% #' -69-1&*9*+2 "%2 " +, ! "*, #4*+*#+- $ - 1#+'*+%,
(# (0% - 2%- #' -%+ (#&* + #& %F6%-(&* + & +8 $0# 0 , 9%%+
4&%!*#6-": 44&#!%, 9: (0%)6, 2 3 %+(#' (0% 4&*+1% J +, (0*-
3#+#4#": 4&%! *"%, (*" ,&* + &%-(#&%, (0% '&%%,#3 #' (0%
4&#'%--*#+ (# %!%&: 1*(*[%+ 1#+-1*#6- #' 0*- 9*"*(%- +, 8+#$0
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3#+2 ()*%3-%"!%- 6(4#-*(*!% *+-(*(6(*#+- &% #'(%+ (0%
&%-6"(#' 16-(#3 +, 4&%)6, *1%J " $- +, " +26 2% &% 3K
9*26#6- +, &9*(& &: J $0%&% &% -#+ *- *+1 4 9"% #' 4&#+#6+1K
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+, (0% #3 +)6&*-4&6, %+1% $ - , *!*, %, 9: (0% #+1% ' 3#6-
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#' #3% 0%*& "%2 " -(6, *%- $%&% *+'"6%+1%, 9: (0% ! &*#6-

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C& !*+ ^4 . /R %((0% 3#+#4#": #" 626-(6- + 0 &-0 3% -6&% $#6",
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5 0 !% 4%&6-%, (0% 7* (&*9% #" C#('&*, 6- -1#!*6- (0% "% &+%, -1#6 ,%
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5 %% (0% 10 & 1(& #" +(*-(*6- 9%# *+ 1*(6- ^ ++ " *** @/R +, *+ +
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+3 %(%(#& 1% $#6", +#(0 !% -0%, !*&(6#6- +, &%-4%1(9"%
-%+ (#&J +, 36-(,#4((0% 3%+, (*#+ #" %+("%: $0# &% ,- / *+- +*#&
M^ %&3 3 0* DR %% -1#6 ,% %1(*- ^1 * 4 D.R _ 11 &* - #9-%&!%- #+
#& 1%T- $#&, - &%%&*+2 (# (0% (#*1 ,#1(&*+%- #" 95 U P (0% $:%& $ -(0%+
%&: :#6+2 +, (0% 4#%(36-(0 !% '(%+! &, - &%2&%(%, 0*- *+)6-(*1%T b

'$8 8G 9' 8>' ?;% ' ; @; ' <=:' @ %=$%@ ;9' <F;8' E<9' < <$?;:'
8' ?;'>8 '8>' ?;'8 :' ;@GF %$D' ?%9' %A<' ; F <$;:' ?;' 8 ;'
@ 8>% <F ;' 9GF9 <=$;'8>' ?;' %9%=B' 8=< $?C' G' ?;':%9@89%N
%8='8>'<' $8G %; '%9' < ;' <=:' 9GF %99%A;'D' <=:' <@% 8' 9; :8 '
@ ;9G ;:' 8' :;A%< ;'>8 ' ?;' 9;= % ;= 9'8 '<' ;<9'>8 ' ?;'
E8 :9'8>'?%9'@ ;:;$;998 9'4 E?% ;' ?;' F8 :' ;@GF %$<='@G 9G;:'
?%9' %=:;@;=:;='%:;<9' E% ?8G '>;<'8>'@< <:8M' 8 '%==8A< %8=9'
?;'> ;;:8 '8>' <F;8' E<9' ;=9 <A;:'?8E;A; 'FC' ?;' %B8 '8>'
?%9' 8E='$8=$ G9%8=9'<=:'?;':;$%:;:'<$$8 :%=B' 8' ?;' ; ;'8>'
?;' <E' ?;'9< ;' JG;9 %8=9' E?%$?' ?%9' %=:G B;=' $8 @; % 8'
;98 A;:' E% ?' <' < % G:;'8>' ;JG% C' 8 ;' 9G% <F ;' 8' ?;' $8 N
8=' 9;=9;' <=:'>;; %=B9' 8>' <=H%=:' >' <' ><% ' ;M$?<=B;' ?<:'
F;;=' 9GF9 % G ;:' 8' ?;' @<C ;=' 8>' 8=;C' <@% 8' 9 % ' $8=N
9%:; ;:' ?;' <=9<$ %8=' <9' <' ;B<' 9< ;'D' <=:' ?;' $8=9G ;:'
=< G ;'>8 ' ?;' <B;' 8>' @GF; C' E% ?8G ' $8=>%=%=B' ?%9' :;>%=% %8='
8' ?;'@ ;$%9;'@; %8:'8>' E; A;'8 '>8G ;;='C;< 9 T1' ?%9' 8@@8N
9% %8='8>'9;= % ;= 9' E<9' @ 8@<B< ;:' %=' ?;' E % %=B9' <=:' ;998=9'
8>' ?;' E8'>8G=:; 9D' ?;' 9$?88 9' 8>' <@% 8' <=:' <F;8' <%=N
<%=;:' ?;%' %=A; ; <;' $8=> %$' >8 ' ?;' <B;' 8>' GBG9 G9'
8' ?<' 8>' <: %<=D' <=:' ?;' E8' 9;$ 9' :; %A;:' ?;%'
<@@; <%8=9' >8 ' <F%=G9' <=:' 8$G G9' ?;%' 89' $; ;N
F <;:' ;<$?; 9' ?;' =< ;9' 8>' E ' <=:' E; ;'
%H;E%9;'<@@ %;:' 8' ?;'9< ;'@< %;9'D' FG 'FC'<'9 <=B;' ;A; 9;'
?;'@8@G <'$<G9;' E<9' %=' ?;'?<=:9' 8>' ;B<9G9 1T' <' % %:'9 <A;'
8>' 8 % %<='E?% ;' ?;'><A8G % ;'8>' ?;' <;9<9' E<9' ;@ ;9;= ;:'
FC' <99%G9 1T' E?8' B 8 %;:' %=' ?%9' :;9$;='>8 ' ?;' @< %8

6-(*+* +' ^ +-(*(6(' ' ***' (*(' >>***' +,' 0%#40*"' %&-' C&-%1' 4' @@' GR' 0 -'
1#3 3%3#& (%,'(0*-' $%*20(:',*-46(%' +,'(0% !%&-%-'#*" #3%&'(0 (' $%&%" ""%25'#+'
%*(0%&' -*,%' -' "%2 '" 6(0#&*(%-'0 (' $ -',%1*,%,'9:' 6" e"%2'<<' ,'*1('+'
+,%1('3' >!***' (*(' * ' "%2 ' * R' -*+1%' +' -*34"%' %>10 +2% (0%' 96:%&'1#6",' +#(' 9%
,*-1&*3*+ (%,' '&#3' (0%' -%""%&

SS 0*-' 1#+(&#!%&-:' $ -' "*8%$*-%' 2*!%+' '#&' (0%' &#16"* +-' (#' -64%&-%,%'(0%
+,%1%+1:'#" ' -% &10' +,'(#'1#34":'$(0#(0%' 40#&*-3' #" *44#1& (%-' $0#' $ -'
((10%,'(#'(0%'-%4(%+ &:' +6 3 9%&'#"'($#' $%%&-'#"':% &-' #&'@GG'#" , :-'^ +-(*(6(' 3'
'((' >>** R' "6(&10' +,'(0%'-(#*1-'^,%" 1*(' 0*"#-#40' 3' ! ' 1' D.R' --*2+' ' 3#&%'
+ (6& "&% -#+' A#6&(%%+':% &-'*-'(0%' 2%W*%4" !';'# &%4 + +=9-'=4* %& "9449Z' %%'
(0%' '#"'(0% -%1(-'*+' -1#6' 1' *>' 4' ./ D@

S5 0% -%&*%-' +,' 1#+1"6-*#+' #"'(0% -%1(-' &% ,%-1&*9%,' 9:' -1#6'^1' ** !**' 4'
D. DGR' +,'*(' $#6",' 9% "+ #-(' &*,*16"#6-' (# 4& *-%' 0*-' %F6 "')6-(*1%'(# (0%-%' #9-#5'
"%*%' -%1(-

(' (0%' '*&-(' -6 3 3#+-' 0%' '"*%-' (#' (0%' (6&9#(' 1#6+1*"J' :%(' 6!%+ "' ^ (*&'*!' @/'
R' -(:"%-' (0%' 4&-%'%1(' #&' ' ' #3%'- +1(*--*36-' "%26 3' *+(%&4&%-' A&#3' 0*-'
-1*%+1%' - R'(' (0%' #"',' -10#"* -(' 0%' $ -'1 "",' +#(' 3 +' 96(' 9##8' %' ,%&*!%,'
(0%' -*+26" &' + 3%#*" %2 -6-'&#3' (0%2 ""%:' $0*10' 0*-'' (0%&' 1#3 3 +,%,' _ 0%&%'
-%%3-' (# 9%+#' +1*%+(' 6(0#&*(:'' #&' (0% (*("% %2 -* +-b

S' 1*(' ++ c' >!*' @' g6%(#+0' *+' %&#+%' 1' >>>!**

<99<99%= C ?;@; @; G< ; : %$? ;$8= 8A; 9%;9 8> ?;9;$ 9
E; ;% = < B ;< ;<9G ;: ; ; %=; : ; 8 ?< % @8 <=
E8 H ?;; @; 8 <: %<=@ ;>; ;:?;$?%;>8> ?;<F%=%<=9
?;> %;=:9 8> 8=< $?C @ ;A<% ;:FG ?;8:; < %8= 8>
< A%G WG %<= %=9;=9%F C ;$8=$% ;: ?;A%$ 8 9 <=: ?;A<=N
JG%9?;: %H; ?;$8= ; @8 < C @?% 898@?; 9 ?;<EC; 9 8>
?;<B;8> ?;= 8=%=;9 :%9$ <% ;: ?;<G ?8 % C 8><9 ;
<=: <:8@ ;:> 8 ;A; C 9C9 ; ?;89 @ 8F<F ;:8$ %=;9 f
G ?;% E % %=B9 E8G :?<A;F;;= ;99 A8 G %=8G9?<: ?;%
$?8%$; F;;= 8 ; G=<=% 8G9 ?;$8=9$%;=$; 8> ?;IG:B;
E<9 @; @;M;: FC ?;=G F; <=: E;%B? 8>: %9$8 :<= ;9 %N
8=%;9 <=: ;A; C 9;= ;=$; ?< ?%9 @<99%8= 8 %= ; ;9 %B?
@ 8=8G=$; E<9 IG9 %>%;: FC ?;9<=$ %8=8>98 ;A;=; <F ;=< ;
=%=:GB;=; :%$ 8>?;C8G=B; ?;8:89%G9 ;M$G9;:?% > 8 #/8>. 8
?; <F8G 8>$8 @< %=B <=: E;%B?%=B ?;% < BG ;=9 %A;<8
$%A% %<=9 <%G9 <@%=%<= <G @%<= <=: 8:;9 %=G9 E; ;
;9 <F %9?;: <9 ?; 8 <$;9 8> IG %9@ G:;=$; < <I8 % C E<9
:;$%9%A;FG %>?;% 8@%=%8=9 E; ;;JG< C :%A%:;: < $<9 %=B
A8 ;E<9 <9$ %F;: 8 ?;'9G@; %8 E%9:8 8> <@%=%<=
?;='WG9 %=%<= <9$;=:;: ?; ? 8=; ?; ;>8 < %8=8>?;% 8 <HE
8 <= IG %9@ G:;=$;E<9 <= < :G8G9 FG %=:%9@;=9<F ; <9H
= ?;9@<$;8> ;= ; $;=G %;9 ?; %=>%=% ;A< %; C 8> <E9 <=:#
;B< 8@%=%8=9 ?<:>% ;: <=C ?8G9<=:A8 G ;9 E?%$?=8
>8 G=; $8G :@G $?<9; <=: =8 $<@<$% C $8G : :%B;9 88H9
$8G :=8 ;<9% C F; >8G=: <=: ?; IG:B;9 @88 %= ?; %:9 8>
%$?;9 E; ; ;:G$; 8 ?; ; M; $%9; 8> ?;% % % ; < ; :%9$; %8=
?; 9GFI;$ 9 8> ?; 6 ; ; H @ 8A%=$; E; %B=8 <= 8> ?;
<=BG<B; ?< :%9@89; 8> ?;% %A; <=: @ 8@; %;
0 :%<;$ 8> ?; < %=9 E<9 % @; >;$ C 9 G:%; : %= ?;
<$<:; %; 8> ;%C G9 <=: 8=9 <= %=8@ ; 9 <= C %<=
98 :%; ?< :%:%8 E<9 >< % %< 8 ?; %=><=$C 8>WG9 %=%<= ?%9
C8G ?? <: F; ;= %=9 G$; : FC ?; ;998=9 8>IG %%# G:;=$; <=: ',
?%9 @; %< $?8%$; 9; ;$; : ?; 89 ; < =; : $%A% %<=9 8> ?;
<9 8 <F8G E% ? ?; 98A; ;%B= %= ?; E8 H 8> ;>8 <0

h -1#6 ,% %1(*-1 !***4 DG . . ,% %&1*-16+,*- '%2 (%&3 $0*10 $ -
44'*%,' (# (0%-% %1'%1(*1' $:%&-0 *- -:+#+:3#6- (# ,*!*,%&%' +(0%
(0*&,'1%+(6&:'(0% -10*-3 $ -#9'*(%& (%,'6+,%&(0%1#+1*'* (#&:'+'"6%+1%#*' "4* +
+,' 4*+* ' 4 11 &* -'*'4' <b
+ %%(0%' 0%#,#-* +# ,%'''*'(*('*!' $*(0 C#,%'&#:T- #3 3%+(&:'(#3 '*'4
#</' 0*-' ,%1&%% 3*20(2*!%' #11 -*#+'(# %-6*(*1 ',*-46(%-' '*8%' (0#-%*+(0%
%(&%-' &#!*+1* '%-'$0%(0%& ')6,2%' $ -#9'*2%,'(#'#'"$'(0%#4*+*#F'#'' 4*+* +'
#&'#'' 3)#&*(:' 2 *+-(0*-')6,2 3%+(' 2 *+-(0*-' 1#+-1%+1%' E1' %('%2*-K
" (#&' 3*20(2*!%' (0 (#4*+*#+' 0#$%!%&' "-%' (0%! '*,*(:' +#(#'' (&6(0' 96(#''
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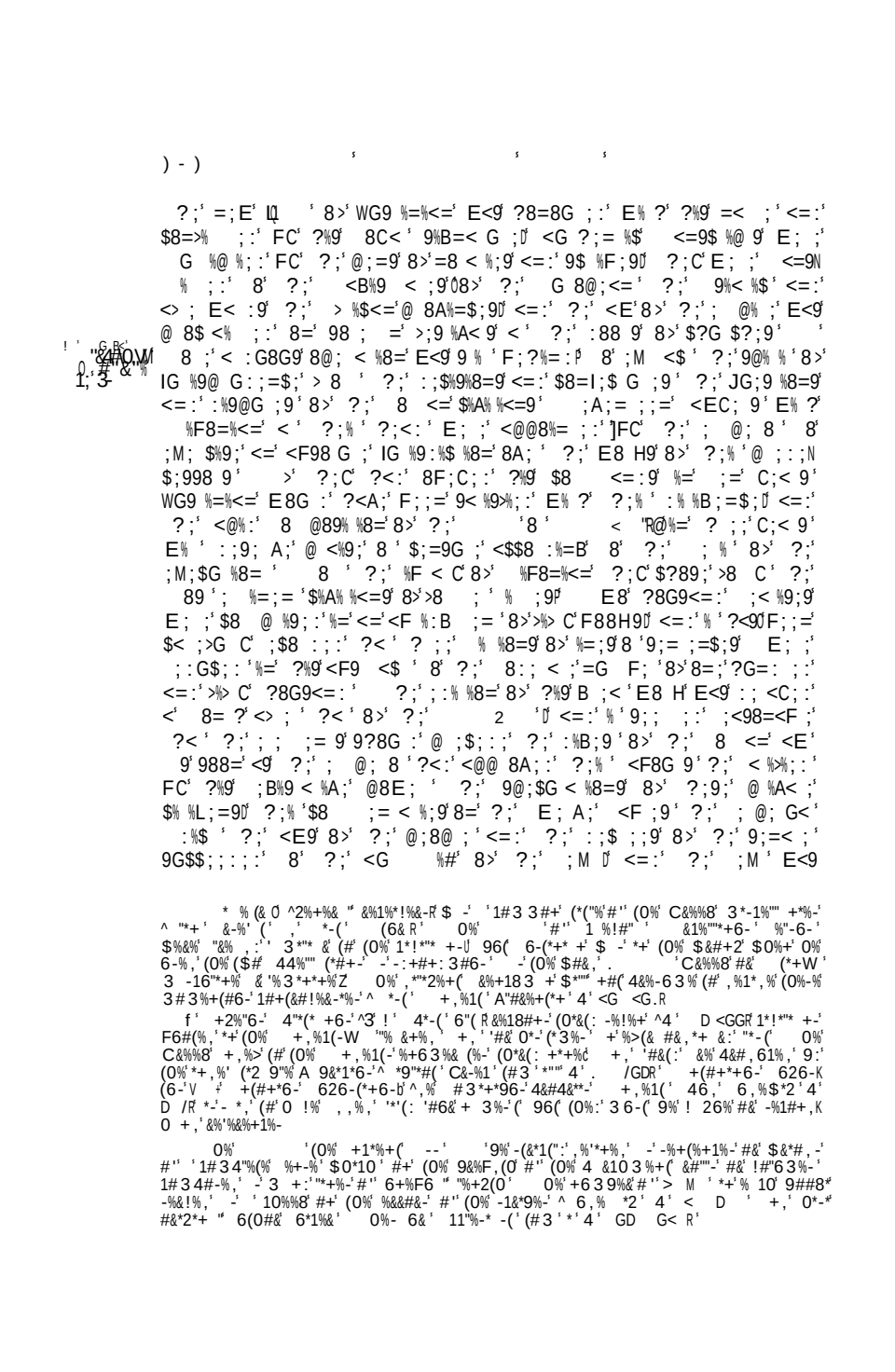
(*#+ 5 0% (0%#&: # ' 4&#'%--#&- $ - --*-(%, 9 : (0% 4& 1(*1% # '
, !#1 (%- +, (0% %>4%&*%+1% # ' 3 2*-(& (%- 4 +, (0% $0# %
6+, %&(8*+2 $ - +*3 (%, 9 : (0% -4*&*(# ' &*9#+* + 5S 3*-
%>(& #&,*+ &: 3 + (0% #9)%1(# ' -# 3 610 4& *-% +, 1%+-6&%
$ - + (*!% # ' *, % *+ 3 40:"* J +, 0*- 2%+*6- "*8% (0 (
# ' 1#+ 5%3 9& 1%, - 0*- #$+ "" (0% 96-*+%-- +, 8+#$"%, 2)%
# '(0% 2% &*9#+* +1# 3 4#-%, 9#(0 *+ 4&#-% +, !%&-% #+ 4
-(& +2%, *!%&-*(: # ' 16&*#6- +, 9-(&6-% -69)%1(- , #69"%
4 +%2:&*1 # ' 6-(*+* + +, (0% "*'% # ' (0% 40*"#-#40%& 0%#)
, #(6- J (0% + (6&% # ' 0 44*+%-- +, (0% , 6(*%- # ' 2#!%&+ 3%+(-
3%&!- 1 ("#26% +, (0% '#6& +, ($%+(: -#&(- # ' 3%(&% J (0%!
-(&#+# 3*1 " 1 +#+ # ' (#"% 3 : J (0% 10 +2%- # ' (0% 3#+(0- J (0%
0#6-%- # ' (0% 4" +%(- J +, (0% 0 &3#+*1:-:-(% 3 # ' (0% $#&",
#
(0% "*(%& (6&% # ' C&%%1% 0% , , %, (0% 6-% # ' (0% (*+(#+26%J
(0% #3 + 1*!*"* +- $%&% , %4#-*(%, *+ 0*- "*9& &: +, *+ 0*-
3*+, J +, 0% 3#-(--*, 6#6-": 16"(*! (%, (0#-% &(- $0*10
#4%+%, (0% &# , # ' $% "(0 +, 4&%'%&3%+(A&# 3 (0% 9 & # '
(0% 4& %(#&* + 4& %'%1(- 0% & *-%, 0*3-%" (# (0% 0#+#6&- # '
F6 %-(#& # ' 1#+-6" +, # ' 3 -(%& # ' (0% # ' *1%- J (0% 1#6+1* # '
6-(*+* + "*-(%+%, (# 0*- %"#F6%+1% +, $*-, #3 J +, %+!: $ -
3*(*2 (%, 9 : (0% 2%+("%+%-- +, ' ' 9*"*(: # ' 0*- 3 ++%&-
0% &%4&# 10%- # '*3 4*%(: +, ! &*1% 0 !%-(*+%, (0% !*&(6%-
#&(0% &%46((*#+ # ' &*9#+* + + 9*2#(%, +, 4%&-%16(*+2
1#6&((0% 4&*+1*4 " 3*+*-(%& $ - 116-%, # ' -%1&%(!%&-*#+
(#(0% 0&*-(* + ' *(0 +, $ -644#-%, (# %+(%&(*+ (0% -%+(*K
3%+(- # ' + (0%*-(+, 2 + $0*10 0 !% 9%%+ *3 46(%,
+1#+--(%+(":%+#620 (#(0% " -(40*"#-#40%&- # ' C&%%1% *-
! &*1% $ - 3#&% 1"% &": 4&#!%, + , 3#&% -%+-*9": '%"(' 0%
$%&% -$:%, 9 : 2*'(- *+ (0% , 3*+*-(& (*#+ # ')6-(*1% (0%
%> 34"% # ' 1#+ $*"" 2 *+ #116&J +#& 1 + (0% 3 %&*(#'

2A#&(0%"%2 " 9#6&-'#' 6-(*+* + ' 0 !%-(6,*%, (0%4&%' 1% (#(0%+-(*(6(%-J
(0%*-(' D, + , <, 4&%' 1%-(#(0% +, %1(- (0%*-(+, D, &%' 1% (#(0%
#, % +, (0% #, %*(-%"" ^3*'(' >!**', % %(%& 6&%+61"% +, #R' '(%&(0%-%
#&*2*+ "(%-(*3#+%-' 0 !%1#+-6"(%, 3#+2(0%3#, %&+- %*+%11*6-^ *-(' '
#' < < .G.R' %&& --#+'^ *-(', %" ' 6&*-4&6, %+1% #3 *+%'4' D / </ R' C& !*+ '
^ 44'4' < GGR' +, 6, %$*2' *+ 0*- *'%#" 6-(*+* +^4 D< ' < 5<D J '#&(0%
#, % +, #!%"-'4' DG D J '#&(0%7*2%-(#& +, %1(-'4' D D < @R

A#&(0%10 & 1(%&#" &*9#+* +' -%%(0%(%-(*3#+%-'#'' &#1#4*6-^ %&-*1' 3*'
1' D<' D. ' +%1, #(' 1' <' DGR' +, 6*, -^(#3***'4' /G '%, *(' =6-(%&R' 6, %$*2
^*+' *(' 6-(*+* +' 4' @/ DG R $#&8-0 &, '!%&:' 0 &, '(#$0*(% $ -0W(0%9" 18 '
3##&

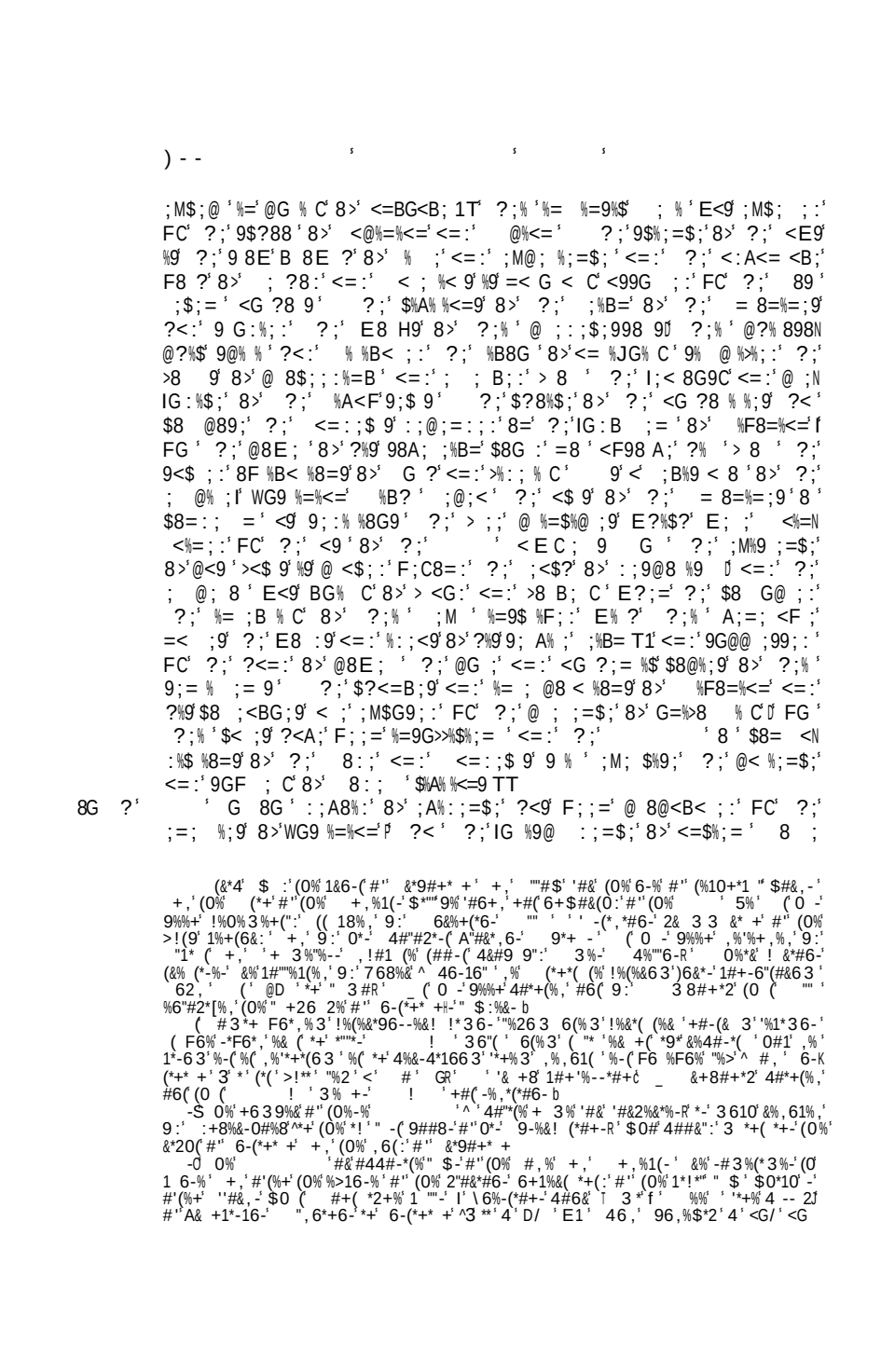
' 44":'(0%($# 4 -- 2%-'#'' 6*, -' (#(0% - 3% 3 +J %!%&:'1*&16 3-(+1%-#
%> 1(":' (""%-' %((0%" $:%&-' 44% &*2+#& +(' +, ' A 9&*1*6-' *-' *+1"*+%, ' (#
-%4 & (%(0%($# 10 & 1(%&-^ *9"*#(' C&-%1' (#3' *' 4' <. ' **' 4' / ' ***' 4' .
>**' 4' <. ' & &')!)R



<F<= : 8= ; : ' <9' <=' G9; ;99 ' ?8GB?' A;=; <F ; ' ; %$' 8>' <= %JG% C
?;' E ' ?;' '<=:' ?;' ; " ' E; ;' :;$ < ;:' 8' F;'
F;' ;B% % < ;' 9C9 ; ' 8>' $%A%'IG %9@ G:;=$;D ?;C' < 8=;' E; ;'
<: % ;:' %=' ?;' %FG=< 9'<=:' ?;C'<8=;' E; ;' <GB? ' %=' ?;'
<$<:; %;9' 8>' 8 ;' 8=9 <= %=8@ ;'<=:' ; C G9' WG9 %=%<='
<:: ;99;:' 8' ?;' 9;=< ;'<=:' @ 8A%=$;9' ?%9' ' 4' <=:'
%%9'@ %:;'G=:; ' ?;' <9H'8>'@%; C'<9$ %F;:' ?;' $8=9G < %8='
8>' ?%9'B ;<' :;9%B=' 8' ?;' 9G@@8 '<=:'%=9@% < %8='8>' ?;' ;% C
%=$;' ?;' ; @; 8 ' :;$ %=;:' ?;' ><; '<=:' ;=AC'8>' %B%=<' <G;'
$8 @89% %8=' E;'$<='8= C' ;JG% ;'<'?%9' ?<=:9' ; ?8:'$?8%$;'$8:;'<=:' >G0
<=:' >%:; % C' ?;' ?G F ;' ?8GB?' %=:%9@;=9<F ;' A% G;9' 8>' <' '
$8 @% ; ' 8=B' ?;' A< %8G9' $8 F%=< %8=9' 8>' %:;<9' % ' %9'
:%>>%$G ' 8'<99%B=' <=C' ;<98=<F ;'@ ;>; ;=$;'D FG '<9' ?;' 8 :; '
8>'WG9 %=%<='%9' :%>>; ;= ' %=' ?%9' ? ;;' E8 H9' % '%9' @899%F ;' ?<'< '
<C'F;'E 8=B'<=:'% '%9'$; <%=' ?<' E8'$<==8'F;' %B? ' =' ?;'
9; ;$ %8=' 8>'<=$%;= ' <E9' ?;' 9;; 9' 8' ?<A;' A%;E;:' ?%9' @ ;0' '
:;$;998 9' E% ?8G'I;<8G9C' <=:' E% ?' ;JG<' ;B< ;P ?;' 9; %;9'
$8G :' =8 '<9$;=:'<F8A;' ?;' ;%B=' 8>' <: %<=' <=:' ?;' =< 8E'
:%9 %=$ %8=' 8>' <B<=%9 ' <=:' ? %9 %<=% C' %= 8:G$;:' FC' ?;'
9G@; 9 % %8='8>' ?;8:89%G9'?<:'F;;='<F8 %9?;:'FC' ?;' $8=9;= '8>'
<=H%=:' G' ?;'IG %9@ G:;=$;' 8>' ?;' <=:;$ 9 %9' $% $G=%0'
9$ %F;:'E% ?%='<'@; %8:'8>'<='?G=: ;:'C;< 9'> 8 ' ?;' ; @; G<'
:%$' 8' ?;' :;< ?' 8>' ;A; G9' ;M<=:; D' ?;' $%A% %<=9' E?8'
%A;:'G=:; ' ?;'>% 9' <;9< 9'< ;'9; :8 '@; % ;:' 8'9@;<H'<=:'
8= C' ? ;;'=< ;9'$<=' F;'< %FG ;:' 8' ?;' <B;'8>' ?;' ;@GF %$
?;'><A8G % ;'8>'WG9 %=%<='R%'?<9'F;;='>%; $; C' G B;:S' E<9'>;< 0'
>G 8>';=$8G= ; %=B' ?;' %B? ' 8>'> ;;:8 ' <=:' ?;' B <A% C' 8>'
8 <=' 9<B;9' %F8=%<='$8=:; =;:' 8' 8F %A%8=' ?;' B;=G%=;',
< S:'=< %A;'E%9:8 '8>' < 8' ?;' $<;A8<9'<=:' G @%$%G9D' E?%;'
?;' %=A8H;:' 9@% % 9' 8 ;' $8=B;=%<' 8' ?%9' 8E=' ?;' C %<=9
6 ;;H9' <=:' > %$<=9' E?8' >8$H;:' 8' ?;' @; %<' $8G ' 8'
9 G:C' < %=' <9'<' >8 ;%B= 8=BG;'<=:'I G %9@ G:;=$;'<9'<' G$ < %A;'
@ 8>;99%8=' G' ?;' %=%9 ; 9' 8>'WG9 %=%<=' E; ;' %=9 G$;:'
8' <F8G ' =8' >8 ' ?;' $G %89% C' 8>'<= %JG< %<=9' FG ' >8 ' ?;'
% ;:%< ;'F;=;>% '8>'?%9'9GFI;$ 9' ' E<9' ?;% ':G C' 8' 9; ;$ '
?;' G9;>G' <=:' @ <$ %$<' @< 9' 8>' ?;' 8 <=' <E D' <=:' ?;'
E % %=B9' 8>' ?;' 8 :' ;@GF %$<=9'?8E;A;' $G %8G9' 8' ;M$; ;= '
E; ;'=8' 8=B;' 9G% ;:' 8' ?;'=;E'9C9 ; '8>' <==; 9' ;%B%8='
<=:' B8A; = ;= ' ; ?<@9' %>' ?;' @ ;$;@ 8 9' <=:' > %;=:9' 8>'
%$; 8' E; ;' 9 % ' < %A;'8G ' $<=:8G ' E8G :' <$H=8E ;:B;' ?<

‘ h' +'*+2%+*#6-' +,'"% &+%,'#& (*#+'#'' 106"(*+2*6-'^ 6&*-4&6,%+(*' +(% 6-(*+*
"' +% '4' < G@R)6-(*'*%-' (0%' 10#*1%' #'' &*9#+* +' 2 *+-((0%' 4 --*#+ (% 10 &2%-'
"#''A& +1*-'''#((#+* +' +,'0*'-%1(&*%-
?' ‘ ‘

) - -

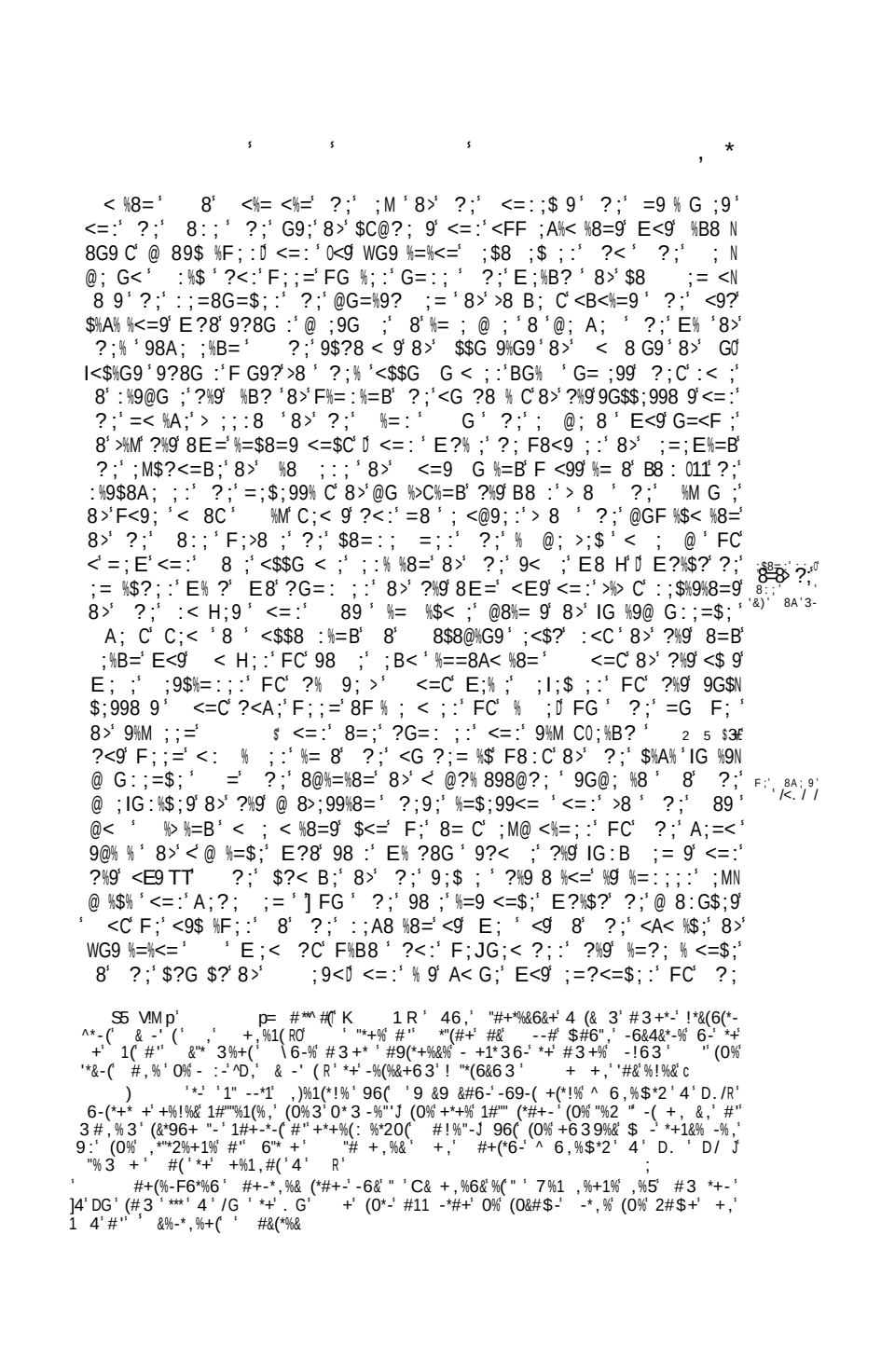


E<9 ; : G$; : ' 8' <9?; 9' FC' ? ;' <G ?8 '8>' ? ;' <= : ; $ 9 ' > 8 ' ? ;' A<%=' @ ; 9G<9%8=' ?< ' % ' E<9' =8E' ;% ? ; ' >; %H;' 8 ' 9G@ ; > G8G9' % ?8G ' G9G @%=B' <=' 8>>%$; ' 98' %=A% : %8G9 ' ? ;' ; @ ; 8 ' %B? ' 9<> ; C' $8 % ' 8' %B=8 <=$; ' <= : ' % ;' ? ;' <$$8 @ %9? ; = ' 8>' ?%9' : ; 9 G$ %A ;' E%9?' ; >8 ;' ? ;' %=A ; = %@=' 8>' @ %= %=B' <= : ' @<@ ; ' ? ;' <F8G ' <= : ' ? ;' < ; %< 9' 8>' E % %=B' 8G : ' F ;' @G N $?<9 ; : ' 8= C' FC' ? ;' %$?D' <= : ' % ' <C' ; <98=<F C' F ;' $8 @G ; : ' ?< ' ? ;'@ %$;' 8>'F88H9' E<9' <='?G= : ; : >8 : ' ? ;% '@ ; 9 ; = 'A<% G; T1' 8@%; 9' E ; ;' 9 8E C' G %@ % ; : ' <= : ' $<G %8G9 C' ; = ; E ; : D' ? ;' ?8@ ; 9' 8>' @ 8>% ' ; @ ; : ' ? ;' 9<$ % ; B%8G9' 9$ %F ; 9' 8' ; <L ;' ? ;' $?< <$; 9' 8>'<= %JG% CD' <= : ' 8@?8$; 9' 8 ' <$% G9' E ; ;' 8F %B ; : ' 8' ; 9%B=' ? ;' @< $? ; = ' 8' %99< 9 ' ?8 % %; 9 ' <= : ' ? ;' B8 : ; =' ; B ; = : 1T' >'9G$?' E<9' ? ;' >< ;' 8>' ? ;' 89 ' F ; <G %>G ' $8 @89%1' %8=9' >' B ; =%G9 ' E?< ' 9 <F% % C' $8G : ' F ;' ; M@ ; $; : ' >8 ' ? ;' : G ' <= : ' F< ; =' E8 H9' 8>' <=' 8F98 ; ;' 9$%; = $; '^ ? ;' F88H9' 8>' IG %9N @ G : ; =$;' E ; ;' %= ; ; 9 %=B' 8' >; E' <= : ' ; = ; <%=%=B' 8' =8= ; D' ? ; % ' A< G ;' E<9' $8== ; $; : ' E% ?' @ ; 9 ; = ' G9 ;' D' <= : ' ? ; C' 9G=H' >8 ' ; A ; ' <9' 988=' <9' ?< ' G9 ;' E<9' 9G@ ; 9 ; : ; : ' FC' ? ;' %==8A< %8=9' 8>' ><9?%8= ' 9G@ ; %8 ' ; % ' 8 '@GF %$' <G ?8 % C ' =' ? ;' <B ;' 8>'@ ; <$;' <= : ' ; < =%=B ' F ; E ; ;=' %$; 8' <= : ' ? ;' <9 ' 8>' ? ;' = 8=%= ; 9 ' <=C' 899 ; 9' ?<: ' F ; ; =' < ; < : C' 9G9 <%= ; : ' <= : ' 98 ;' G %=< %; 9' 8>' ? ;' 9$?88 ' 8 ' >8 G ' E ; ;' H=8E ='8= C' 8' ? ;' $G %8G9' FC' <: %N %8=' <= : ' ; @8 ' ? ; ; ' ?G= : ; : ' <= : ' 9%M C' C ; < 9' 8>' : %98 : ; ' <= : ' : ; $ < C' <$$; < ; : ' ? ;' @ 8B ; 99' 8>' 8F %A%8=' 4' <= : ' % ' <C' >< % C' F ;' @ ; 9G ; : ' ?< ' 8>' ? ;' E % %=B9' E ?%$?' WG9 %=%<=' %9' <$$G9 ; : ' 8>' = ; B ; $ %=B' <=C' E ; ;' =8' 8=B ; ' 8' F ;' >8G= : ' %=' ? ;' %F < %; 9' 8>' ? ;' <9 1T' ? ;' $8@%; 9' 8>' <@%=%<=' 8 ' @%<= ' E?%$?

=' 0%+' A6-(' #&' A 6-(6-' -#" ,' (' &*-' 0*-' '*&-(' 4&*+(%,' *9"%-' -' 3 +6-1&*4(-' (0%' 4&*1%' #'' ' 4 &1O 3 %+(' 1#4 : ' $ -'&%, 61%, ' ' &# 3' '#6&' #&' '*!%' 06+, &%, ' (#' -*>(: ' '*' (: ' +, ' '#&(: '1&#$+- ' 0%' 469"*1' $ -' (' '*&-(' 4"% -%, ' $*(0' (0%' 10% 4+%-- ' +, ' ('"%+2(0' 4&#!#8%, ' 9 : ' (0%' , *-1#!%&: ' #'' (0%' '& 6, ' ^ ((*&%' ++ "' : 4#2& 49 ' (# 3 ' *' 4 ' DJ' '*&-(%, *(*#+R

0*-' %>%1& 9"%' 4& 1(*1%' 4&%! *"%, ' '&# 3' (0%' !***(0 ' +, ' 3#&%' %-4%1* "":-' '&# 3' (0%' >**(0 ' 1%+(6&: ' $0%+' *(9%1 3 %' "3#-(' 6+*!%&- '' ^ #+(' 61#+' *+' (0%' , 3#*&%-', %' ⊺ 1 , %3*%' (# 3 ' !*' 4 ' G ' E1 ' *9"*#(056%' *-#++, %' , %'" ' 7*4"# 3 (*F6%' (# 3 ' *' 4 ' @ R

3 4#+*6-' ^ + , %1(' 3' *' (*(' **' "%2 ' G' ME ≠ <GbR' #9-%&!%-' (0 (' #'' (0%' (0&%' '#6+K , %&-' #'' (0%' 1*!*'' $ ' 6(*6-' &6(6-' + , ' +*''&-' %>(+(' !#" 6 3 *+ ' 1&*4(' +*''*(3 #+6 3 %+(J (0 (' #'' -# 3%' #", ' &%469"*1 +' " $: %&-' 0-%1' !%&- +(6&' %#&6 3' -1&*4('*+(%&' 3 +6-' 0# 3 *+6 3 ' *20(' #'' (0%' 626-(+' - 2%-' $%&%' &%, 61%, ' (# ' 1# 3 4%+, *6 3' D' * #'' -1%("*6-' -1&*4(' +#+' %>(+(-%, ' 6+6-' "*9%&' E1 J #'' &%9 (*6-' 3*+6-' '&%F6%+ ' 8(+(6&J #'' 69%&#' "*9&*4 &6 3' 2& (* -6+(' +: ' F6#((*#+-' *+' (0% + , %1(-' &%' ', %&*!%, ' '&# 3' 9##8-' $0*1O' &*9#+* +' +%!%&' - $J' + , ' *+' (0%" "#+2' 4%&*#, ' '&# 3' (0%' $ **(0' (# (0%' >***(0' 1%+(6&: '#'' # 3 %' (0%' '&% , *+2' #''(0%' 3#, %&+-' -611%--*!%"-' %4%+, -' #+' (0%' 8+#$" 2%' + , ' !%& 1*(: ' #'' (0%*&' 4&%, %1%--#&-' 0%' 10*%" 3#+6 ' + % + (-' #'' # 3 +' " $' 4&%!*#6-' (# 6-(*+* +' &%Ú ^*R' (0%' A& 2 3 %+(-' #'' "4* + ' , *-' Q ! %&%, ' *+' / . J ^DR' (0%' # 3 3 %+(&*%-' #'' C *6-' , *-1#! 3#%, ' (' %&#+ ' *+' J



: ;M ; % C 8><= < %9 E?8 9GF9$ %F; : $8=>;99%8=9 8>: ;F <=: @ 8 %9;9 8>@<C ;= E% ?: ?:; =< ;9 8>: ?:; %$?;9 C %<=9 ?;C @ ;<: ; :: ?:; ;9 <F %9?; : @ ;9$ %@ %8= 8>: ?% C 8 >8 C C;< 9 FG ?;% : ;>; =$; E<9 8A; G ; : FC < ; 89@;$ %A;; : %$ E?%$?; M ;=: ; : ?:; $ <% 9 8>: ?;$?G $?: 8 ?;: ; 8>< $;= G C <=: ; : %$ 98 @ ;B=<= E% ?: %=IG9 %$;: <=: :%98 : ; ?< <> ; 9; A%=B ?%9 8$$<9%8=< @G @89; % E<9 @ G: ;= C <F8 %9?; : %= ?;9< ; % B = >: $<=: 8G E% <$JG% ?;; @; 8 ?% 9; >: <=: <=9>; ?;$8 G@ %8= 8 ?%9 E%>;: <=: ><A8G % ;9 ?;9G9@%$%8= 8>98 >8G <A%$; G9 9 % : ;B <: ;? ;<I;9 C 8>?%9 <E 9 <=: ?;: <: A8$< ;9 8>WG9 %=%<= <C <$H=8E ; : B; %< 9G$?; A% C E?< 98; A; F; ?;8 %A; %9 G=E8 ?C 8><; B%9 < 8 <=:< <= 8=< $?9 9; :8 $8=: ;9$; =: 8 F; $8 ; ?;@ ;$; @ 8 9 8> ;99 D ?; % 9GFI; $ 9 <=: 98 ;@ <%9; %9 :G; 8 WG9 %=%<= FC E?89; $8 <=: <= < @ ;9C9 ; E<9 ; : G$; 8 <9?8 <=: ; ;N ;= < C ;< %9; 8=B ?; A< %8G9 %=9 % G ;9 8>; ?; 8 <= <E TT ?89; 8> <%G9 TT E ; ; ?; 89 @8@G < %=; ?; <9e <=: ;9 <=: ?; % G9; <C F; $8=9%: ; ;<9 <= ; A%: ;=$; 8>$; % ; % ?;C E ; 9; ;$; : FC ?; @; %< : ; ;B< ;9 %F8 =%<= ?;8@%: G9 <=: 8 8 ?;G9 <=: ?;> ; ; : 8 <=: @G % C 8>?; ; = 8=%=; 9 E<9 %=$ G9 ; : E% ?; ?; $8< 9; < ; %< 9 8><: ; B; =; < ; <B; ?;9< ; A8 G ; E?%$?= 8 : G$; : ?;C8G ?8> 8 ; 8=9 <= %=8@ ; <=: ; C G9 8; ?;B <: G< 9 G: C 8> ?; 8: ; <=: <=: ; $ 9 %9 9 % @ ;$%8G9 8; ?; ?%9 8 %<= ?; @?% 898@?; <=: ; ?; <B%9 < ; ?; 2 8>WG9 %=%<= < ; : %A%: ; : %= 8 >8G F88H9 ?; C @ 8$; ; : E% ?= $8= ; @ N %F ; ?8: > 8 8 , <=: > 8 ?%=B9 8 & 4 <=: ?; < %$; 8> ' $ %9 ; N %=< ; : FC ?; @ %=$%@ ;9 8>E " F 82 ?; : %9 %=$ %8=8>: <=H9 <=: %9 ?; >% ;9 %/ G 8>< %M; : <=: % % ; : B8A; = ;= = <=$; ?; ; <%=9

= &#1#4*6- +%1 ,#(1 . &-*3*" &4&*!*"%2% $ -2& +(%, (# (0% 106&10 4" #3% ^ #!%" *> R A#& (0% 2%+%& " &%4% " #" (0%-% 3*-10*%!#6-* *+ ,6"2%+1%- -%% #!%" 1>* +, ,*1(!

1* +(*6- *+ 0*- +-(*(6(%- #" 0&*-(* +*(: + %"%2 +(+, -4%1*#6- $#&"1' 4&#4#-%- (# *3*((% (0%(*("% +, 3 %(0#, #" (0% 1*!*"* +- \ 6*, 3 4&6, %+(%- %(&9*(&# -%F6*((*- +-(*(6(*#+%- *!*"*- 6&*- #3 4#-*(- %, *, % 3 +(^ +-(*(6(7*!*+ *1 *R 610 - "4* + 6" A"#&%+(*+6- &1* +

0% %3 4%&#& 6-(*+* +1 ""- 0*3 ! (0#620 0% , *%, 9%'#&% (0% %+, #" (0% -%1#+, 1%+(6&: *- +-(*(6(%- &% F6#(%, 9: %&!*6- #%(0*6- &*-1* + J +, (0% %4*(#3 % 9: &&* +*- (*"" %(+(^ %% (0% &#"%2#3 %+ +, #(%-(# (0% %, *(*#+ #" 106"(*+2 *+ (0% 6&*-4&6, %+(* +(% 6-(*+* +% +2, (@ %*+%11*6- *-(# # < < "M#, %$ d *+ *(6-(4 R _ %% 9#!*) 4 . @ +

8>' %F; C' < ;' H;@ ' < %A;' FC' ?;' 9@% % ' ?;' ?8=8G 9 ' <=:' ;A;=' ?;'@ ;IG:%$;9 ' 8>'>%> C' ?8G9<=:'=8F ;9#TT' E8' ?G=: ;:'>< %N %;9' 9G@@ C ' %=' %=;<' : ;9$;= ' ?;' 9;$8=:' F <=$?' 8>' ?;' =B %9?' ;B%9 < G ;' E?%$?' <%= <%=9 ' F; E;;=' ?;' H%=B' <=:' $8 8=9 ' ?;' F< <=$;' 8>' ?;' $8=9 % G %8=' ' B <:< %8=' 8>'@< %$%<=9' <=:' @ ;F;%<=9 ' ' 8>' 9 <=B; 9' <=:' 9GFI;$ 9 ' ?<9' 9G@@8 ;:' ?;' < %9N 8$ <$C' 8>' 6;=8<' ;=%$;' <=:' <=$%;=' 8 =;' ?;' @; >;$ ' ;JG< % C' 8>' ;=' %9' ?;' @8%= ' %=' E?%$?' ?;' ;M ; ;9' 8>' :;N 8$ <$C' <=:' :;9@8 %9 '< ;' $8=>8G=:;:' 9%=$;' ?;' <I;9 C' 8>' ?;' @ %=$;' 8 ' @;8@ ;' E8G :' F;' 8>>;=:;:' %>' <=C' ?;<:9' E; ;' ;M< ;:' <F8A;' ?;' ;A;' 8>' ?;%' >; 8E09 <A;9' 8 ' >; 8E0$% %L;=9' =' ?;' :;$ %=;' 8>' ?;' 8 <=' ; @% ;' ?;' @ 8G:' :%9 %=$ %8=9' 8>' ?;' ' ;@GF %$' E; ;' B <:G< C' <F8 %9?;:' <=:' ?;' ;<98=' 8 '%=9 %=$ ' 8>' WG9 %=%<=' $8 @ ; ;:' ?;' 9% @ ;' >8 ' 8>' <=' <F98 G ;1' 8=< $?C' ?;' ; @; 8 ' $8G :' =8 ' ; <:%$< ;' ?;' @8@G < ' ;A; ;=$;' E?%$?' < E<C9' E<% 9' 8=' ?;' @899;99%8=' 8>' ?; ;:% < C' E ;< ?' 8 ' ?;' ; 8 C' 8>' >< 8G9' <=$;9 8 9 ' ;' :; %B? ;:' 8' ?8=8G ' E% ?' % ;9' <=:' ; 8 G ;= 9' ?%9' B;=; < 9 ' <B%9 < ;9 ' <=:' 9;=< 9D' <=:' ?%9' @ ;$< %8G9' %=:G B;=$;' $8 G=%$< ;:' 98 ;' <C9' 8>' ?;% ' B 8 C' 8' ?;' @; 98=9' 8>' ?;% ' E%A;9' <=:' $?% : ;= ' G ' %=' ?;' ;C;' 8>' ?;' <E ' < ' 8 <=' $% %L;=9' E; ;' ;JG< ' <=:' < ' 9GFN I;$ 9' 8>' ?;' ; @% ;' E; ;' $% %L;=9' 8>' 8 ;' ?< ' %=;9 % <F ;' $?< <$; ' E<9' :;B <:;:' 8' <=' 8F98 ;;' <=:' ; @ C' =< ;' ?;' A8%$;' 8>' <' 8 <=' $8G :' =8' 8=B; ' ;=<$ ' ?%9' <E9' 8 ' $;< ;' ?;' <==G< ' %=%9 ; 9' 8>' ?%9' @8E; ' P' ?%9' $8=9 % G %8=< ' %B? 9' %B? ' ?<A;' $?;$H;:' ?;' < F% < C' E% ' 8>' <' <9 ; D' <=:' ?;' F8 :' <:A;=N G ; ' > 8 ' 6; <=C' 8 ' <F%<' E<9' <: % ;:' E% ?' ;JG< ' ><A8G ' 8' ?;' $%A% ' <=:' % % < C' $8 <=:' E?%$?' ?;' $% %L;=' < 8=;' ?<:' F;;=' 8=$;' ;= % ;:' 8' <99G ;' 8A; ' ?;' $8=JG;9 9' 8>' ?%9' > F; 9' ?;' >% 9' <99< 9' ?<:' 9$ G@G 8G9 C' BG< ;:' ?;' :%9 %=$ %8=' 8>' ' <=:' ' F% ?' E?%$?' E<9' :;$%:;:' FC' ?;' $8=:% %8=' 8>' ?;' 8 ?; D' <=:' ?;' $<=:8G ' 8>' ?;' <E9' E<9' 9< %9>%;:' %>' ' > ;;:8 ' $8G :' F;' <9$; <%=;:' :G %=B' <' 9%=B ;' 8 ;= ' F;N E;;=' ?;' $8=$;@ %8=' <=:' ?;' :;%A; C' ?;' 9 <A;9' E?8' E; ;' %F; <;:' FC' <' B;=; 8G9' <9 ; '% ;:%< ; C' ;= ; ;:' %= 8' ?;' % :: ;' $ <99' 8>' ' 8 ' > ;;: ;=D' FG ' ?;C' $8G :' =;A; ' F;' ;=> <=$?%9;:' > 8 ' ?;' :G %;9' 8>' 8F;:%;=$;' <=:' B < % G:;D

"#Ø %%' (0%' ++ "%-' #"*(*F6%-',%' I 9 ',%' (' *%&&%' (#3 '*' 4' D/' $0#', (%-' *+' (0%' :% &' @</' 0%' 3#-(' +1*%+(' ' 3*"*%-' 1" *3' (0%' *3 3%3#&* '' 4#--%--*#+'#'' &3-' +,' '*%'-' *+1%' (0%' &6- ,%-' -#3%' (0%' 3#-(' (&6":' &%-4%1(9"%' 0 !%' 9%%+' 1&% (%,' 9:' (0%' 8*+2' '#&' 3%&*'(' +,' -%&!*1%-' 0%' &%1%+(+,' !6"2 &' 1&#$,' *-' ,%&*!%,' '&#3' (0%' 36"(*(6,%' #'' #'*'*1%-' $*(0#6(' (&6-(' #&' ,*2+*(:' $0*10' 1#+K (*+6 "":'%++#9"%' (0%' $% "(0:'4"%9%* +-

E?< ;A; ' E; ;' ?;' >;% 9' 8>' ?;% ' %=:G9 C' ?;% ' @< 8=' <=:'
?%9' >< % C' %=?; % ;:' ?;' ?% :' @< 0' 8 ' ;A;=' ?;' E?8 ;' 8>' ?:% '
>8 G=; '%>' ?;C' :%;:' E% ?8G ' $?% : ;='<=:' E% ?8G ' <' ;9 < ;= '
WG9 %=%<=' ;9@;$;:' ?;' %B? 9' 8>' @< 8=90' FG ' ?%^' %=:G B;=$;'
; 8A;:' ?;' F<:B;' 8>' :%9B <$;' > 8=%' ?;' E8' %=>; %8 ' 8 :; 9' 8>'
> ;;: ;=P' E?8;A; ' $;<9;:' 8' F;' < 9 <A;' 8F <%=;:' E% ?8G '
;9; A;' 8 ' :; <C' ?;' 9 < %8=' 8>' <' $% %L;=' 0' <=:' < ' ;=B ?' ?;'
:%B=% C' 8>' <=' %=B;=G8G9' F% ?' E?%$?' =< G ;' ?<:' ;>G9;:' E<9'
$;< ;:' ' 9G@@89;:' FC' ?;' 8 =%@ 8 ;=$;' 8>' ?;' ; @; 8 '
?< ;A; ' ;9 <%= 9' 8>' <B; ' 8 ' >8 9' 8 ' =G F; 9' ?<:' F;;='
>8 ; C' %= 8:G$;:' 8' $?;$H' ?;' <FG9;' 8>' <=G %99%8=9' <=:'
?;' 88' <@%:' %=$;<9;' 8>' A% ;' <=:' %=:%B;= ' 8 <=9' ?;' >%=< C'
<F8 %9?;:0' <=:' ?;' 9@% % ' 8>' ?%9' <E9' @ 8 8 ;:' ?;' ;M %=$ %8='
8>' :8 ;9 %$' 9; A% G:;' ; ' ?;' ;<9 ; ='@ 8A%=$;9' E; ;' >% ;:'
%=' ?;' % ;' 8>' WG9 %=%<=' E% ?' G % G:;9' 8>' 9 <A;9' ;% ?; ' F8 '
8 'G $?<9;:' >8 ' ?;' G9;' 8>' ?;% ' <9 ; 90' <=:' ?;' @ %$;' > 8 '
;=' 8' 9;A;=C' @%;$;9' 8>' B8 :' E<9' :; ; %=;:' FC' ?;% ' <B;'
?;% ' 9 ;=B ?' <=:' ?;% ' ;:G $< %8= G ' ?;' ?< :9?%@9' 8>'
?%9' :;@;=:;=' 9 < ;' E; ;' $8= %=G< C' :% %=%9?;:' FC' ?;' %=> GN
;=$;' 8>' B8A; = ;=' <=:' ; %B%8=0' <=:' ?;' @ %:;' 8>' <' 9GFI;$ '
E<9' =8' 8=B; ' ; < ;:' FC' ?%9' <F98 G ;' :8 %=%8=' 8A; ' ?;' %>;' <=:'
?<@@%=;99' 8>' ?%9' F8=:9 <= %T#

<=: ?;' <E' 8>' =< G ;' %=9 G$ 9' 89 ' <=% < 9' 8' $?; %9?' <=:'
, , ", &(** ;:G$< ;' ?;% ' %=><= ' @ 8B;=C ' ?;' <E' 8>' ;<98=' %=$G $< ;9' 8'
?;' ?G <=' 9@;$%;9' ?;' ; G =9' 8>' >% %<' @%; C' G ' ?;' ;M$ G9%A; '
<F98 G ;' <=:' @; @; G< ' :8 %=%8=' 8>' ?;' >< ?; ' 8A; ' ?%9' ?%: ;='
%9' @;$G %< ' 8' ?;' 8 <='IG %9@ G:;=$; ZT #' <=:' 9;; 9' 8' F;' $8;A<

''(0%' #4(#+' #'' ' -" !%' $ -' 9%F6% (0%,' (#' -%!%& '" "%2 (%%-' (0%:' ,&%$' "#(-'
+,' (0%' "#-%&-' $%&%' %+(*("%,' (#' (0%*&' -+ &%' #'' 0'-' ! "6%U (%+' 4'%1%-' #'' 2#'," '#&' '
1#3 3#+' -%&! +(' #&' 3 *,' >3,%&'(%+' :% &-J *'' 9#!%'(0 (' 2%' ($%+(:' J *''(0%:' 8+%$'
'(& ,%' (0*&(:J +#(&*%-' #&' $&*'(%&-' '*'(:' J 3*,$*!%-' #&' =' -*>(:J' %6+610-'
6+,%&' (%+' :% &-' (0*&(:' 4*%1%-J 9#!%' '*'(:' *'' (& ,%-3%+' -%!%+(:^ #,' 3' !*'
(*(' >=*' '%2' <R' 0%-%' "%25' 4&*1%-' &% 2%+%(5":' 9%"#$'(0#-%'#''(0%' 3 &8%(

)Z#&' (0%' -((%' #'' -" !%-' +,' '&%%, 3%+' -%%' +-(*(6(%-' 3' *' (*(' *** !*** J ' *'O
(*'' *>' ' *** '(*(' !***' *>' ' !*** ' !*** b' +,%1(-'#&' 7*2%-(' 3 3 (*(' ! !*' J 3' >>>!*** ' (*(' '
* *! ' +,' (0%' $0#"%' #'' (0%'>"(0'9 5 8 ' #,%' ' !*' (*(' *! ' J 3' !*** ' (*(' * >>*** ' %' *(
0%+1%'#&$ &,-' 6+,%&-(##,' (0 (' $*(0' (0%' #&*2*+ '" (%>(' #'' (0%' +-(*(6(%-' +,' +K
,%1(-' (0%' 1#&&%-4#+,%+(' &(*1'%-' *+' (0%' +(*F6*(*%-' +,' '%3 %+(-'#'' %'+%11*6-' &%'
*3 4'*1*(":' F6#(%,J +,' $*(0' (0%>>!*** ' '*&-(' 9##8-' #'' (0%' +,%1(-' (0%' '% &+%,'
+,'& ,(*#+ '" #6*3 %+(&*%-' #'' C%& &,' ##,(' ^ 4%& ' (#3 ' **' ' 4' / G' (0%' %+,V
62,' (' @D.R

&-%%' (0%' 4 (&*' 4#(%-(-' *+' (0%' +-(*(6(%-' ^3' *' (*(' *>R' (0%' +,%1(-' ^3' *'
(*(' !*' !*&R' +,' (0%' #,%' ^3' !***' (*(' >"!***' >"!***' >"*>' _o' >"!*' >"!**' >"!***' %,'
=&(*2%&bR' 56-' 4#(%-(' (*-' F6#,' *+' "*9%&#-' 0 9%3 6-' 4&#4&*6 3' #-(' #'!*6 3' #3 +#'
&6 3' 6 ' %+*3' "*' -6+(' 0#3*+%-' F6' ("%3' *+' "*"5&#-' 0 9% +(' 4#(%-((%3' '
F6 "%3' +#-' 0 9%3 6-' C *6-' 3%+(*#+-' (5' C " (* +-' -' 0 !*+2' (0*-' 4#$%&J *' / / J')'
+,' -%- &' ^ ' C' ' R' -((%-' (0 (' *(%>*-(%,' *+' C 6" b' 0

E% ? ' ? ;' >8G= : < %8=' 8>' ? ;' $% C #T1' ? ;' @< ; =<' @8E ; ' E<g' %=9 % G ; :' 8 ' $8=>% ; :' FC' 8 G Gg' ?% 9; >0' <= :' <> ; ' ? ;' @ <$ %$;' 8>' ? ; ;' $; = G %; g' % ' E<g' %=9$ %F; :' 8=' ? ;' >8G ?' <F ;' 8>' ? ;' ;$; A% 9 ' =' ? ;' >8 G ' ? ;' 9; =< ; ' 8 ' ? ;' $< @' ? ;' <: G ' 98=' 8>' <' 8 <=' $% %L ; =' ; = I8C ; :' ? ;' @GF %$' <= :' @ %A< ;' %B? g' 8>' <' 4' %=' ?%g' >< ? ; Kg ?8G9; ' ? ;' E<g' <' ; ;' ' $8=>8G= : ; :' FC' ? ;' <Eg' E% ?' ? ;' 8A; <F ;9 ' ? ;' $< ; ' <= :' ? ;' 9 <A; 9 ' E ?8 ' ? ;' $<@ %$%8Gg' <9 ; ' %B? ' < %; =< ; ' 8 ' : ; 9 8C' E% ?8G ' F ; %=B' ;9@8=9%F ;' 8' <=C' ;< ? C' %FG=< ' ? ;' ?<= :' E?%$?' F ; 9 8E ; :' ? ;' : <% C' 9G9 ; =<=$;' %B? ' ;9G ;' ? ;' A8 G= < C' B%> ' <= :' E ?< ; A ; ' E<g' <$JG% ; :' FC' ? ;' <F8G ' 8 ' >8 G= ;' 8>' ? ;' 98=' E<g' % ; : %< ; C' 89 ' %=' ? ;' @ 8@ ; C' 8>' ? ;' >< ? ; ' %g' 9 8 ; =' B88 : 9' R?%g' 8M ; =' 8 ' ?%g' $?% : ; =S' %B? ' F ;' ;$8A ; ; :' FC' ? ;' 9< ;' <$ %8=' 8>' ? ; > 0' <= : ' %>' ; % ? ; ' ?<: ' F ; ; =' BG% C' 8>' <' ;9IS<99 ' % ' E<g' %=' ?%g' 8E=' 8@ %8=' 8' $8 @ ; =9< ;' ? ;' : < <B ;' 8 ' ;9%B=' 8' ? ;' % = IG C' @< C' ? ;' 8F=8M%8Gg' <=% < ' ' ? ;' $< ' 8>' %= : %B ; =$; ' 8 ' <A< %$; ' ? ;' <9 ; ' 8>' <' >; % C' $8G :' : %9@89 ;' 8>' ?%g' $?% : ; =' 8 ' ?%g' 9 <A ; 9 ' G ' ? ;' $8= : % %8=' 8 >' ? ;' 9 <A ;' E<g' >< ' 8 ;' <: A<= <B ; 8G9 ' 9%=$;' ? ;' ; B<%= ; :' FC' ? ;' >% 9 ' <=G %99%8=' ?%g' < %; =< ; :' > ; ; : 8 0' ? ;' 98=' E<g' <B<%=' ; 9 8 ; :' 8' ?%g' G==< G < ' >< ? ; 0' ? ;' %B? ' F ;' $8= : ; =; :' 8' 9 ; A% G : ;' <' 9 ; $8= : ' <= :' <' ?% :' % ; ' <=: ' % ' E<g' =8 ' % ' <> ; ' ? ;' ? % :' 9< ;' <=: ' : ; %A ; <=$;' ?< ' ? ;' E<g' ; => <=$?%9 ; :' > 8 ' ? ;' : 8 ; 9 %$' @8E ; ' E ?%$?' ?<: ' F ; ; =' 98' ; @ ; < ; : C' <FG9 ; : ' $$8 : N %=B' 8' ?%g' : %9$; %8=' <' >< ? ; ' %B? ' $?<9 %9 ;' ? ;' ; <' 8 ' % <B%=N < C' ><G g' 8>' ?%g' $?% : ; =' FC' 9 %@ ; 9 ' FC' % @ %98= ; = ' FC' ; M% ; ' FC' 9 ; = : %=B' ? ; ' 8' ? ;' $8G= C' 8' E8 H' %=' $?<%=9' < 8=B' ? ;' ; <= ; 9 ' 8>' ?%g' 9 ; A<= 9 ' ? ;' <I ; 9 C' 8>' <' @< ; =' E<g' < ; :' E% ?' ? ;' @8E ; ' 8>' %>;' <= :' : ; < ?0' <= :' ? ;' ; M< @ ; g' 8>' 9G$?' F 88 : C' ; M ; $G %8=9 ' E ?%$?' E ; ;' 98 ; % ; g' @ <%9 ; :' <= :' = ; A ; ' @G=%9?; : ' <C' F ;' <$; :' %=' ? ;' <==< g' 8>' 8 ; ' F ; C8 = :' ? ;' % ; g' 8>' 8 @ ; C' <= :' GBG9 G9 ' ; % ? ; ' <B ; ' =8 ' <=H

" %07*#+ : -*6-' " ' 3 **' 4 ' . ' /' 1 ' D b' C& !*+ ' ^4 44 ' 4 ' D R' 4&#, 61%-' (0% $#&, -' #'' (0% >*# (9"%- ' 4*+* +' ^=+' #"" (*#+%' %26 3 ' # 3 + ' %(#- *1 &6 3 %' (*(' *! ' 4 ' DG.R -(: "%-' (0*-' 4 (&* ' 4#(%-(- ' "%>' &%2* J "4* +' ^ , ' 9*+ ' 3' >>! *' +' +, %1(' 3' *' (*(' !*' "%2 ' R - : - ')6-' 4#(%-((*-' 3#&*96-' &%1%4(6 3 ' J +, ' '6&*#-6-' '*"*6 3 ' *+' 4#(%-((% 0 9%9*(' #$' - 1&%, W#&' & (0%&' 0#$' 9-6&, ' 3

04' +, %1(' 3' >"!**' (*(' **' "%2 ' . ' #' <J' "%2 ' < ' #' * ' 610' $ -' (0% , %1*-*#+' #'' "4* +' +, ' 6"

34-' 0%' (&*+ ' 3 +1*4 (*#*-' 3#-(1"% &":' , %'*+%, '9 :' "4* +' ^A& 2 3 %+(' >' 4 ' / ' / D' %, *(' 106"(*+2R' +, ' 9%-(*"" 6-(& (%, ' *+' (0% +(*F6*(*%-' #'' %*+%11*6-

"#(:' 6-(*+* +' (0%' #", ' " $ ' (0%')6-' +%1*-' #'' (0% #3 +' ' (0%&' ^ *"-(*(**(' 3 *! ' (*(' *>' ' ^!***)' #' @R' *-' &%4#&(%, ' +, ' &%4&#9 (%, ' # 3 %' "%2 " ! %-(*2%- &%' "%' (*+' (0% ' +, %1(-' ^3 >"*** ' (*(' > i*>' "%2' < ' #' .R' +, ' (0% #"" (*# %26 3 ' # 3 + &6 3 ' %(* #- *1 &6 3 ' ^(*(' ** ' #' < ' 4 ' R

) !)

=8 ' ?;' $8=9G < ' 8>%$;' =8 ' ?;' ?8=8G 9' 8>' <' %G @? ' $8G :' ;M; @ ' ?;' 89 ' % G9 %8G9' $% %L;=' > 8 ' ?;' F8=:9' 8>'% %<' 9GFN I;$ %8='D 34" ?%9' 8E=' :;9$;=:<= 9' E; ;' %=$ G:;:' %=' ?;' >< % C' 8>' ?;%' $8 8=' <=$;9 8 'D <=:' ?;' $ <% 9' 8>' <:8@ %8=' E; ;' =8 ' ;99' 9<$;:' 8 ' ;99' %B8 8G9' ?<=' ?89;' 8>'=< G ;' % ?8G ' >;< ' ?8GB?' =8 ' E% ?8G ' :<=B; ' 8>'<FG9;' ?;' 8 <=' ;B%9 < 8 9' ?<:' ;@89;:' <=' G=F8G=:;:' $8=>%:;=$;' %=' ?;' 9;= % ;= 9' 8>'@< ; =<' 8A;D <=:' ?;' 8@@ ;99%8=' E<9' ; @; ;:' FC' ?;' <99G <=$;' ?< ' ;<$?' B;=; < %8=' G9 ' 9G$$;;:' %=' % 9' G =' 8' ?;' <E>G ' :%B=% C' 8>'@< ;=' <=:' <9 ;

8' F8<%8% ?;' >% 9 ' % % < %8=' 8>' @< ; =<' @8E;' %9' <9$ %F;:' 8' ?;' IG9 %$;' <=:' ?G <=% C' 8>' G <D' <=:' ?;' <%:' E?8 ' E% ?' ' >< ?; %9' $8=9;= ' ?<:' ;9@8G9;:' <' > ;; <=' E<9' @ 8 ;$;:' > 8 ' ?;' :%9B <$;' 8>' F;$8 %=B' ?;' E%>;' 8>' <' 9 <A;' =' ?;' >% 9 ' <B;9' E?;=' ?;' % C' E<9' @ ;99;:' <=:' 8> ;=' >< %9?;:' FC' ?;' < %=' <=:' G9$<=' =;%B?F8G 9 ' ?;' 9< ;' 8>' $?% : ;=' %B?' F;' <' > ;JG;=' @ <$ %$;D FG ' <9' <' 8 <=' $8G :' =8 ' ;B< C' @G $?<9;' ?;' %F; C' 8>' ?%9' >; 8E0$% %L;=' ?;' < H; ' G9' B <:G< C' ><% ' <=:' ?;' <:;' 8G :' F;' :;9 8C;:' FC' ?;' $8=JG;9 9' 8>' ?;' ;@GF %$' =' % @; >;$' %B?' 8>' @ 8@; C' E<9' <' ;=B ?' $8 N G=%$< ;:' 8' 98=9#D <=:' ?;' ? ;;>8 :' :%9 %=$ %8=' 8>' " ' " ' <=:' E<9' <9$; <%=;:' FC' ?;' IG %9N @ G:;=$;' 8>' ?;' 8:;' <=:' <=:;$ 9 %T# >' <' ?< ' @ 8$;;:;:' > 8 ' ?;' >< ?; ' ?;' % @< ;:' 8= C' ?;' G9;' <=:' ;9; A;:' ?;' <F98 G ;' :8 %=%8='D C; '%>' ?%9' B88:9' E; ;' 98:' ?;' >% %<' @8 %8=' E<9' ;M$;@ ;:' FC' <' ><A8G <F ;' %= ; @ ; < %8=' > 8 ' ?;' ;:N <=:9' 8>' ?;' $;:% 8 9' =' E?< ;A; ' <$$ G;:' FC' < %<B;' B%> ' 8 ' $8 < ; <' 9G$$;99%8=' ?;' @ 8@; C' E<9' 9;$G ;:' 8' ?;' 98=D FG ' ?;' >< ?; ' G= ;99' ?;' ?<:' F;;=' 9@;$%< C' ;M$ G:;:' ;=I8C;:' ?;' G9G> G$' :G %=B' ?%9' %>;' 9' <' IG9 '<=:' @ G:;=' ;E<:' 8>' % % < C' A% G;' ?;' 9@8% 9' 8>' ?;' ;=; C' E; ;' <$N JG% ;:' @899;99;:' <=:' F;JG;< ?;:' FC' ?;' 98 :%;' < 8=;D <=:' ?;' ><% ' <=< 8BC' E<9' ;M ;=:;:' 8' ?;' ; 8 G ;= 9',8>' <=C' %F; <' @ 8>;99%8=' ?;' 9< < C' 8>' @GF %$' 9; A%$;' <=:' ?;' 9<$;:

0S >1%4(' #+' 469"*1' #11 -*#+-' +,' *+' (0%' 1(6 '' %>%&1*-%' #'' 0*-' #'' '*1%' +' 469"*1*-' "#1*-' (F6%' 3 6+%&*96-' (F6%' 1(*#+*96-' 4 (&6 3 ')6& ' 16 3' '*''*#&6 3' F6'' *+' &# 2*-(& (6' -6+(' 4#(%-((*96-' 1#"" (' *+(%&F6*%-1%&%' 4 6""6"6 3' %(' 1#++*!%&%' E1' ^ 6 ' C%""*6-' #1(% ' ((*1-%' 6' DR' 0%' "%--#+-' #'' (0%' 40*"#-#40%&' 6&6-' $%&6)6-(*'*%,' 9:' (0%' #",' +,' 3 % 3 #& 9"%' %> 34"%' #' A 9*6-' J +,' E ;' 3 :' 1#+(% 34" (% (0%' - 3 %-(#(:' *+' (0%' -(:"%' #'' *!:' ^>>*!' ..R +,' (0% 0# 3 %":' *,*# 3' #'' " 6,*6-' W \6 ,&*2 &*6-' (0%' ++ '*-(

%%' (0%' 2& ,6 '' %+" &2% 3 %+(' +,' -%16&*(:' #'' (0%' '*'* '' ! ! ' *+' (0' +-(*(6(%-' L^' **' (*(' *>' ' (0%' +,%1(-' ^ ' >!' (*(' * ' 3 >"*' (*(' * R' +,' (0%' #,' R3 *!' (*(' >>:*' !** R

%F; < % C' 8>' ?;' ; @; 8 '8 ' ?;' ; @ ;99' ?;' %>;' 8>'<' $% %L;='
E<9' ;99' ;M@89;:' ?<='?%9' >8 G=;' 8' ?;' <FG9;' 8>' @< ; =<'
@8E; ' ; ' ?%9' %>;' %B? ' F;' <:A; 9;' 8' ?;' %= ; ;9 ' 8 '
@<99%8=9' 8>' <=' G=E8 ?C' >< ?; D ?;' 9< ;' $ % ;9' ?< ' > 8E;:'
> 8 ' ?;' $8 G@ %8=' E; ;' 8 ;' 9;=9%F C';> ; ' FC' ?;' ?G <=% C'
8>' ?;' GBG9 <='<B;'D <=:' ?;' $ G; ' %M8' E?8' E?%@ ' ?%9' 98='
% ' ?;' ;M@% ;:' E<9' 9<A;:' FC' ?;' ; @; 8 ' > 8 ' ?;' IG9 ' >%% C'
8>' ?;' G % G:; % 1' ?;' 8 <=' >< ?; ' > 8 ' ?;' %$;=$;' 8>'
9; A% ;' :8 %=%8=' E<9' ;:G$;:' 8' ?;' B <A% C' <=:' 8:; < %8='
8>'<' IG:B; ' ?;' @ ;9;=$;' <=:' 8@%=%8=' 8>' GBG9 G9' $8=>% ;:'
?;' 9;= ;=$;' 8>' ;M% ;' @ 8=8G=$;:' <B<%=9 ' <=' %= ;= %8=<' @< %N
$%:;' FC' ?;' :8 ;9 %$' %FG=<' 8>' %G9 ' <: %<=' <=9@8 ;:'
8' <=' %9 <=:' ?;' I;< 8G9' @< ;= ' E?8 ' %H;' <' 8FF; ' ?<:'9;%L;:'
?;' 8@@8 G=% C' 8>' ?G= %=B ' 8' <99<99%=< ;' < C8G ?' ?;' %=N
$;9 G8G9' 8A; ' 8>' ?%9' 9 ;@ 8 ?; ' ' @ %A< ;' IG %9@ G:;=$;'
%9' ;@GB=<= ' 8' ?;' 9@% % ' 8>' 8=< $?C' ?;' @< ;= ' E<9' <B<%='
;:G$;:' > 8 ' <' IG:B;' 8' <=' <$$G9; D <=:' ?;' <B%9 < ;9' E; ;'
;=I8%=;:' FC' ;A; G9' ;M<=:; ' 8' ?;<' ?%9' $8 @ <%= 9' <=:' ;M;N
$G ;' ?%9' 9;= ;=$; ' ;' $8G :' =8' 8=B; ' <H;' ?;' %>;' 8>' <' 9V '
E% ?8G ' %=$G %=B' ?;' BG% ' <=:' @G=%9? ;=' 8>' G :; D <=:'
?;' @<%=9' 8>' @< %$%:;' ' > 8 ' E?%$?' ?;' ?<:' F;;=' ;M$;@ ;:' FC'
?;' 8 @;%<=' <E' E; ;' >%=< C' %=> %$;:' FC' ?;' IG9 %$;' 8>' 68=D
9 <= %=; %%# ?;' 9< ;' @ 8 ;$ %8=' E<9' :G;' 8' ;A; C' @; %8:' 8>'
;M%9 ;=$;D <=:' ;<98=' G9 ' <@@ <G:' ?;' ?G <=% C' 8>' <G G9'
>8 ' % @G %=B' ?;' $ % ;' 8>' G :; ' 8' ?;' >< ?; ' E?8' 9 <=B ;9'
8 '9 < A;9' 8 ' <F<=:8=9' ?%9' =;E0F8 =' %=><= ' 8 ' ;M@89;9' ?% ' %='
<' @GF %$' @ <$;' 8' >%=:' ?;' ; $C' E?%$?' ?;' ?% 9; >'?<:' :;=%;:'
G ' ?;' ;M@89% %8=' 8>'$?% : ;=' E<9' ?;' @ ;A<% %=B' <=:'9 GFF8 ='
A%$;'8>'<= %JG% CD % ' E<9' 98 ; % ;9' @ ;9$ %F;:' 8> ;=' @; % ;:'
< 89 ' < E<C9' @ <$ %9;:' E% ?' % @G=% C' FC' ?;' =< %8=9' E?8'
=;A; ' ;= ; <%=;:' ?;' 8 <=' %:;<9' 8>' @< ; =<' @8E; D <=:'
?;' : < < %$' @8; 9' E?8' <@@;=:' 8' ?;' ?G <=' ?;< ' ;@ ;9;=
E% ?' %=:%>>; ;=$;' <' @8@G < ' $G9 8 ' E?%$?' E<9' @< %< ;:' FC' ?;

VBS 0%' %> 34"%-' #'' &*>#' +,' &*6-' &%' &%" (%,' 9:' %+%1 ' ^,%' "%3%+(**' *'
.' /R' (0%' '#&3%&' $*(D'0#&&#&' (0%" ((%&' $*(D' 44" 6-%

& '\6#,' " (&#+*-'3 2*-' F6 3' 4 (&*-') 6&%' %63' *+(%&'%1*('+ 3' 4 (&* ' 4#(%-(-'
+'4*%((%',%9%(' +#+'*+' (&#1*((%'1#+-*-(%&%^ %&1* +' +-(*(6('3'>*!'*+' +,%1('
' >"!***' (*(' *>' "%2' /R

D 0%' #34%* +' +,' #&+%"* +' " $-' ,%' ' +,'= ' &%' &%4% (%,'
#&' & (0%&' 9&*,2%,' (!*(D (0%" -(' -644"%3%+(-' #'' "%> +,%&' %!%&6-' #+-(+(*+%'
+,' "%+(*+* +'*+' (0% +,%1(-'^3' >"!***' (*(' !***' *>R' +,' #,%' ^" 5*>' (*(' >! '
>!**R' %%' "*8%$*-%' (0% 0%#,#-* +' #,%' ^' *>' (*(' >*!' >! R' $*(D' C#,%'&#:I-'
#3 3%+(&:' ^(#3 ' ***' 4' . <R' $0#' 4#6&-' ' '"##,' #'' +1*%+(' +,' 3#,%3'
"% &+*+2'#!%&' (0%-%4%+ '" $-

<=:ſ ?;%ſ< F% %8=ſE<9ſG=9G$$;99>%% Cſ ;9%9 ;:ſFCſ ?;ſB <A% Cſ8>ſ <8ſ ?;ſ ;=98 ſ ?;C' :;$ %=;:ſ ?;ſ 98 ; =% %;9ſ 8>ſ ?;ſ 8 :ſ =G@ %< 9ſ :;>;< ;:ſ ?;ſ <==G<ſ @ ;9$ %@ %8=ſ FCſ <=ſ <F9;=$;ſ 8>ſ ? ;;ſ :<C9ſ<=:ſE% ?8Gſ 89%=Bſ ?;%ſ=< ;ſ 8ſ %=:;@;=:;=$;ſ 9GF9$ %F;:ſ ?;ſ %F; <ſ<=:ſ:;>%=% ;ſ ; 9ſ8>ſ<ſ < %<B;0$8= <$ ſ >ſ ?;%ſ @ %A< ;ſ >8 G=;9ſ ?;Cſ $8 G=%$< ;:ſ ?;ſ G9; ſ <=:ſ 9;$G ;:ſ ?;ſ@ 8@; Cſ ?;ſ ;9 < ;9ſ8>ſ<ſE%>;ſ $8G :ſ=;%?; ſF;ſ <%;=< ;:ſ=8ſ 8 B<B;:ſFCſ<ſ@ 8:%B<ſ ?G9F<=:ſ9ſ ?;%ſ G G<ſ B%> 9ſ E; ;ſ@ 8?%F% ;:ſFCſ ?;ſI;<8G9Cſ8>ſ ?;ſ <E9ſ <=:ſ ?;ſ %9$8=:G$ſ 8>ſ;% ?; ſ@< Cſ %B? ſ<>>8 :ſG=:;ſ<=8?;ſ=< ;ſ <ſ >G G ;ſ 9GFI;$ſ >8ſ <=ſ<$ %8=ſ8>ſ ?;> ſ 8ſ ?%9ſ 889;ſ<=:ſ A8 G=<Cſ $8 @<$ ſ ;%B%8G9ſ<=:ſ$%A%ſ % ;9ſE; ;ſ =8ſ 8=B;ſ ;99;=%<ſ<=:ſF; E;:=ſ@; 98=9ſ8>ſ<9% % <ſ <=H ſ ?;ſ<@@< ;=ſ $8 G=% Cſ8>ſ %>;ſE<9ſ<8E;:ſ<9ſ9G>>%$%;=ſ ;A%:;=$;ſ8>ſ ?;%ſ =G@ %<9ſ ?;ſ :%B=% Cſ8>ſ < %<B;ſE<9ſ ;9 8 ;:ſFCſ ?;ſ ?%9N %<=9ſE?8ſ:; %A;:ſ<ſ9@% % G<ſB <$;ſ>8 ſ ?;ſ @ <C; 9ſ8>ſ ?;ſ ><% ? ſ<=:ſ ?;ſF;=;:%$ %8=ſ8>ſ ?;ſ@ %;9ſ8ſF%9?8@ſ ?;ſ8 %B%=ſ A< %:% Cſ<=:ſ:G %;9ſ8>ſ ?;ſ ?8 Cſ%=9 % G %8=ſE; ;ſ ;BG < ;:ſFCſ ?;ſ <:% %8=ſ8>ſ ?;ſ 9C=<B8BG;ſ ?;ſ@ ;$;@ 9ſ8>ſ ?;ſ B89II;ſ <=:ſ ?;ſ $<=8=9ſ8>ſB;=; <ſ8ſ@ 8A%=$%<ſ 9C=8:9ſ <=:ſ ?;ſ $8=9$%;=$;ſ 8>ſ ?;ſ ?%9 %<=9ſE<9ſ<E;:ſFCſ ?;ſ :;$;;9ſ <=:ſ $;=9G ;9ſ8>ſ ?;% ſ ;$$;9%<9 %$<ſ G ; 9ſ ;ſ ?;ſ <B%9 <;9ſ8>ſ WG9 %=%<=ſE; ;ſ=8ſ9GFI;$ſ 8ſ ?;ſ<G ?8 % Cſ8>ſ ?;ſ$?G $?ſ ?;ſ ; @; 8ſ$8=9G ;:ſ ?;ſ G=F; %;A%=Bſ $%A% %<=9ſ8>ſ<= %JG% Cſ<=:ſ ?;ſ$?8%$;ſ8>ſ < % 8=%<ſ <E9ſ %=ſ ?;ſ 8:;ſ<=:ſ <=:;$9ſ %9 :% ;$;:ſFCſ ?;ſ ;< ? Cſ 8 %A;9ſ8>ſIG9 %$;ſ @8 %$Cſ <=:ſ ?;ſ =< G <ſ> ;;:8 ſ8>ſF8 ?ſ 9;M;9

.F. .% .<; %. :? 8 ;;

;9%:;9ſ ?;ſ <#;; ;=ſ8>ſ ?;ſ @< %;9ſ ?;ſ ;99;=$;ſ8>ſ;A; Cſ < %8=<ſ;E <$ ſ ?;ſ 8 <=ſ < %<B;ſ ;JG% ;:ſ ?;ſ @ ;A%8G9ſ <@@ 8F< %8=ſ8>ſ ?;ſ@< ;=91ſ ſ>< ?;ſ %B? ſF;ſ>8 $;:ſFCſ98 ;ſ ;$;=ſ <E9ſ 8ſ9G@@ Cſ ?;ſE<= 9ſ8>ſ<ſ < G ;ſ :<GB? ; ſ FG

+ſ(0%ſ 44* +ſ" $ſ$%ſ3 :ſ0% &ſ(0% *0*(*2 (*+2ſ-4%%10ſ#'ſ "%&*6-ſA" 116-ſ +,ſ(0%ſ -%!%&%ſ 1%+-#&* ſ# ## (*#+ſ #'ſ (0%ſ %",%&ſ (#ſ ^ *!ſ i>>*!ſ * Rſ 6($% -0 ſ"ſ & (0%&ſ 0% &ſ(0%ſ 4#"*-0%,ſ0*-(#&* +ſ #'ſ(0% %*20(0ſ(0 +ſ(0% &#620ſ#& (#&-ſ#"ſ (0%ſ -*>(0ſ 1%+(6&:ſ#'ſ #3%ſ 0%ſ 4&*+1*4"%-ſ +,ſ%!%+ſ(0% -(:"% ſ#'ſ (#ſ &% 3#&% 11**& (%":ſ4&%-%&!%,ſ9:ſ 6"6-ſC%""*6-ſ^>ſD<R

3 4#&ſ(0% -:-(%3ſ#'ſ %$*-0ſ +,ſ (0#"*1ſ +* (&*3#+:ſ -%%ſ %",%+ſ^ >#&ſ 9& *1 ſ 444ſ !#"ſ **ſ 4ſ /D GRſ *+20 3ſ^ 0&*-(* +ſ +(*F6*(*%-ſ 3ſ>>**Rſ +,ſ 0 &,#+ſ^*&* 9ſ ,0-ſ 1&%3%+-ſ(#3ſ!*R

< 0%1*!*"ſ " $-ſ#'ſ 3 &&* 2% &%'%>4#-%,ſ*+ſ(0% +-(*(6(%-ſ^ſ*ſ(*(ſ>Rſ(0% +,%1(-ſ^3ſ >>***ſ >>*!ſ>>!Rſ +,ſ^0% #,%ſ^3ſ!RJ 96(ſ -ſ(0% (*("% ,%&*(6 +64(* &6& ſ5ſ:%(ſ*3 4%&'%1(ſ$% &%#9"*2%,ſ(# %>4"#&%ſ(0% '& 23%+(-ſ#'ſ "4* +ſ ^(*(ſ*>ſ4ſ Gſ/ Rſ +,ſ(0% #"" (*# %263ſ #- *1 &63ſ^(*(ſ>!*ſ4ſ@ Gſ@ &Rſ $*(0ſ(0% #(%-ſ#'ſ *(01%6-ſ +,ſ 106"(*+2ſ 0%:ſ'*+,ſ*+ſ(0% 1#3 3%+(&:ſ#'ſ %&!*6-ſ^#+ſ(0%*-(ſC%#&2*1ſ +,ſ(0% .(0 +%*,Rſ($# 16&*#6-ſ4 -- 2%-ſ

;A;=ſ ?%9ſ %=9<=% Cſ E<9ſ =8 ſ B;=; < Cſ< 8E;ſ 8ſ 9G@; 9;:;ſ ?;ſ
=;$;99% Cſ 8>ſ ?%9ſ $8=9;= ſ ?;ſ $<G9;9ſ 8>ſ ?;ſ :%998 G %8=ſ 8>ſ
< % 8=Cſ ?<A;ſ A< %;:ſ < 8=Bſ ?;ſ 8 <% 9Ð FG ſ ?;ſ 89 ſ
98 ; =ſ 9<$ < ;= ſ ?;ſ $8=>< ;< %8=ſ % 9; >ſ %B? ſ < E<C9ſ F;ſ
:8=;ſ <E<Cſ FCſ % ;9ſ 8>ſ <ſ $8= < Cſ ;=:;%W Cſ =ſ ?;ſ >% 9ſ <B;9ſY E=HK<ſ
?;ſ >< ?; ſ 8>ſ <ſ >< % Cſ %B? ſ 9; ſ ?%9ſ $?% : ;= ſ <=:ſ ?%9ſ E%>;ſ E<9ſ
;$H8=;:ſ %=ſ ?;ſ =G F; ſ 8>ſ ?%9ſ $?% : ;=Ð ?;ſ :8 ;9 %$ IG:B;ſ
%B? ſ@ 8=8G=$;ſ ?;ſ:;< ?ſ 8>ſ ?;ſ 8>>;=:; ſ 8 ſ ?%9ſ ; $Cſ %B? ſ
;M@;ſ ?; ſ > 8 ſ ?%9ſ F;:ſ <=:ſ ?8G9;Ð FG ſ ?;# 9 <A; Cſ 8>ſ ?;ſ
E ; $?;:ſ >; < ;ſ E<9ſ ?8@; ;99ſ <=:ſ @; @; G< ſ G= ;99ſ ?;ſ <99; ;:ſ
>8 ſ ?%9ſ 8E=ſ $8=A;=%;=$;ſ ?;ſ <= Cſ @ ; 8B< %A;ſ 8>ſ :%A8 $;ſ ?;ſ
E< ;9 ſ <@@ <G9;ſ ?<9ſ 0F;;=ſ <A%9?;:ſ 8=ſ ?;ſ A% G;ſ 8>ſ ?;ſ
8 <=9 ſ E?8ſ <F9 <%=;:ſ > 8 ſ ?;ſ ;M; $%9;ſ 8>ſ ?%9ſ ; @ %=Bſ
@ %A% ;B;ſ <F8A;ſ >%A;ſ?G=: ;:ſ C;< 9Ð FG ſ ?;ſ 9< ;ſ ><$ ſ;A%=$;9ſ
?;ſ G=;JG<ſ ; 9ſ 8>ſ <ſ $8==;M%8=ſ %=ſ E?%$?ſ ?;ſ 9 <A;ſ E<9ſ G=N
<F ;ſ 8ſ ;=8G=$;ſ ?;ſ C <= ſ <=:ſ ?;ſ C <= ſ E<9ſ G=E% %=Bſ 8ſ
; %=JG%9?ſ ?%9ſ 9 <A;ſ ?;=ſ ?;ſ 8 <=ſ < 8=9ſ F;$< ;ſ ?;ſ
;JG< ſ <=:ſ A8 G= < Cſ $8 @<=%8=9ſ 8>ſ ?;% ſ 8 :9 ſ <ſ =;Eſ IG %9N
@ G:;=$;ſ E<9ſ %= 8:G$;:ſ ?< ſ < %<B;ſ %H;ſ 8 ?;ſ @< =; 9?%@9ſ
%B? ſ F;ſ :%998 A;:ſ FCſ ?;ſ <F:%$< %8=ſ 8>ſ 8=;ſ 8>ſ ?;ſ <998$%< ;9
=ſ ? ;;ſ $;= G %;9ſ 8>ſ @ 89@; % Cſ <=:ſ $8 G@ %8=ſ ?%9ſ @ %=$%@ ;ſ
E<9ſ;= < B;:ſ 8ſ>; JG;=ſ @ <$ %$;ſ<=:ſ@; =%$%8G9ſ<FG9;ſ <99%8=ſ
%= ; ;9 ſ 8 ſ$<@ %$;ſ 9GBB;9 ;:ſ :<% Cſ 8 %A;9ſ >8 ſ ?;ſ :%998 G %8=ſ
8>ſ < %<B;Ð <ſ E8 :ſ <ſ 9%B=ſ <ſ ;99<B;ſ <ſ ; ; ſ ?;ſ <=:< ;ſ
8>ſ <ſ >%;;: <=ſ :;$ < ;:ſ ?;ſ 9;@< < %8=Ð ?;ſ 89 ſ ;=:;ſ 8>ſ
?G <=ſ $8==;M%8=9ſ E<9ſ :;B <:;:ſ 8ſ <ſ <=9%;=ſ 98$%; Cſ 8>ſ @ 8>% ſ
8 ſ @ ;<9G ;ſ $$8 :%=Bſ 8ſ ?;ſ A< %8G9ſ $8=:% %8=9ſ 8>ſ %>;ſ F8 ?ſ
9;M;9ſ < ; =< ; Cſ >; ſ % ;ſ :%9B <$;ſ <=:ſ %=IG Cſ <=ſ %=$8=9 <= ſ
9@8G9;ſ <=9>; ;:ſ ?; ſ E;< ?ſ 8ſ <ſ =;Eſ >< % Cſ <F<=:8=%=Bſ <ſ
=G ; 8G9ſ@; ?<@9ſ <ſ 9@G %8G9ſ@ 8B;=Cſ 8ſ ?;ſ @< ; =<ſ <G ?8 % Cſ
<=:ſ $< ;ſ 8>ſ ?; ſ < ;ſ ?G9F<=:ſ Ð <ſ F;<G %>G ſ A% B%=ſ %B? ſ F;ſ :%9N
%99;:ſ 8ſ ?;ſ E8 :ſ 8 :ſ %=:%B;= ſ <=:ſ > %;=: ;99Ð FG ſ ?;ſ
; G$ <=$;ſ 8>ſ ?;ſ 8 <=9ſ E?;=ſ ?;Cſ E; ;ſ@ ;99;:ſ 8ſ < %<B;ſ
FCſ GBG9 G9ſ 9G>>%$%;= Cſ < H9ſ ?<ſ ?;ſ @ ;A<% %=Bſ %=9 % G %8=9ſ
E; ;ſ ;<9ſ><A8G <F ;ſ 8ſ ?;ſ <;9ſ 9@;$%8G9ſ ?;8 Cſ %9ſ $8=0

= ſ 11#&,*+2ſ (#ſ "6(&1Ð^4ſ /@Rſ #36"6-ſ ""#$%,ſ #+":ſ (0&%%ſ '#6+,-ſ #"ſ
,*!#&1%W ,&6+8%++%-;-ſ M ſ 4#*-#+*+2ſ 0%&ſ10*",&%+J 5 4'Q\$N ſ NWWWfÐ ,6"(%&:ſ +,ſ
ſ "-%ſ 8%:-ſ (0%&$*-%ſ(0% 06-9 +,ſ $0# 96-%,ſ 0*-ſ -64&% 3 1:ſ '#&'%*(%,ſ 0 ""ſ 0*-ſ
2##,-ſ(# (0% $*'%ſ +,ſ0 "ſ (# (0%2#,,%-ſ %&%-ſ +,ſ#'%&%,ſ ſ - 1&*'*1%^$*(0ſ (0%
&%3 *+,%&ZR (# (0% (%&&%-(&* "ſ ,%*(%-ſ 0*-ſ -(& +2%" $ $ -ſ %*(0%&ſ *3 2*+ &:#&
ſ(& +-%+(ſ *'%ſ#" #36"6-ſ 1ſ DD b
ſ +ſ (0%:% &ſ#" #3% /Dc ſ 46&*6-ſ &!*"*6-ſ 62 ſ &%46,*(%,ſ ſ *&ſ ſ2##,
96(ſ 9 &&%+ſ $*'% ^7*#+:-*6-ſ "ſ 3 **ſ 4ſ <_1ſ D/b ſ "6(&10ſ *+ſ 63,ſ 4ſ .
"%&*6-ſ >*36-ſ 3 **ſ 1ſ *ſ "6"6-ſ C%""*6-ſ "!ſ <R ſ %ſ $ -ſ F6%-(*#+%,ſ 9:ſ 3%
(%+-#&-ſ +,ſ0 (%,ſ9:ſ(0% 4%#4"%J 96(0*-ſ,*!#&1%ſ-(##,ſ6+*34% 10%,ſ*+ſ" $

>G ; :ʻ FCʻ ?%9ʻ > ; ;ℐ<=:ʻ@ ; >;$ ʻ ;M@; % ;= ʻ E?%$?ʻ : ; 8=9 < ;9ʻ ?<ʻ ?;ʻ %F; Cʻ 8>ʻ :%A8 $;ʻ :8;9ʻ=8ʻ$8= %FG ;ʻ 8ʻ?<@@%=;99ʻ<=:ʻ A% G;ʻ ?;ʻ ><$% % Cʻ 8>ʻ 9;@< < %8=ʻ E8G :ʻ : ;9 8Cʻ < ʻ G G<ʻ $8=>%: ;=$;ʻ <=:ʻ%=> < ;ʻ ;A; Cʻ %> %=Bʻ :%9@G ;ʻℐ ?;ʻ %=G ;ʻ :%>>; N ;=$;ʻ F; E ; ;=ʻ<=ʻ?G9F<=:ʻ<=:ʻ< 9 <=B; ʻ E?%$?ʻ %B? ʻ98ℐ ;<9% Cʻ F;ʻ ; 8A;:ʻ %B? ʻ 9 % ʻ 8 ;ʻ ;<9% Cʻ F;ʻ >8 B8 ;=ℐ <=:ʻ ?;ʻ < 8=ʻ E?8ʻ%=ʻ >%A;ʻ C;< 9ʻ $<=ʻ9GF % ʻ 8ʻ ?;ʻ ; F <$;9ʻ8>ʻ ;%B? ʻ ?G9F<=:9ʻ G9ʻ $;<9;ʻ 8ʻ ;A; ;=$;ʻ ?;ʻ $?<9 % Cʻ 8>ʻ?; ʻ 8E=ʻ @; 98= %#T

`W %%<%8=9 8>ʻ%H9 8>:%A%% $; ʻ =9G>>%$%;=ʻ ; ;:%;9ʻ>8 8E;:ʻ E% ?ʻ :%9 <=ʻ<=:ʻ < :Cʻ 9 ;@9ʻ ?;ʻ <@%:ʻ @ 8B ;99ʻ8>ʻ ?;ʻ ;A% ʻ ?;ʻ <=$%;=ʻ E8 9?%@ʻ 8>ʻ ?;ʻ 8 <=9ʻ<>>8 :;:ʻ<ʻ@;$G %<ʻ B8:;;99ʻ 8ʻ ?;<ʻ <=:ʻ ;$8=$% ;ʻ ?;ʻ $8 @ <%= 9ʻ8>ʻ<ʻ < %;:ʻ %>;ʻ ℐ FG ʻ ?; ʻ ;@% ?; ʻ 8>ʻ .@.ʻ ?;ʻ<@@;<9; ʻ 8>ʻ?G9F<=:9ʻ 88ʻ$;< Cʻ %=:%$< ;9ʻ8=ʻE?%$?ʻ 9%:;ʻ 9GF %99%8=ʻ<=:ʻ ;@;= <=$;ʻ E ;ʻ < E<C9ʻ ;M@;$; :ʻ ʻ A; Cʻ <$ʻ 8>ʻ<ʻ $% %L;=ʻ E<9ʻ 9GFI;$ʻ 8ʻ ?;ʻ IG:B ;= ʻ 8>ʻ ?;ʻ ⅆ ?;ʻ >% 9ʻ E?8ʻ G9;:ʻ ?;ʻ @ %A% ;B;ʻ 8>ʻ:%A8 $;ʻ<99%B=;:ʻ<ʻ ?;% ʻ $8 N <=:ʻ ?;ʻ 8 %A;9ʻ 8>ʻ?%9ʻ $8=:G$ ℐ <=:ʻ<ʻ9;=< 8ʻ E<9ʻ;MN @; ;:ʻ>8ʻ:%9 %99%=Bʻ?%9ʻA% B%=ʻ9@8G9;ʻE% ?8G ʻ ?;ʻH=8E ;:B;ʻ8ʻ <:A%$;ʻ8>ʻ?%9ʻ> %;=:9ʻ ?;=;A; ʻ<=ʻ<$ %8=ʻE<9ʻ%=9 % G ;:ʻ>8ʻ ?;ʻ ;$8A; Cʻ 8>ʻ<ʻ < %<B;0@8 %8=ʻ ?;ʻ ʻ <9ʻ ?;ʻ BG< :%<=ʻ 8>ʻ ;JG% C ʻ ;M< %=;:ʻ ?;ʻ $<G9;ʻ <=:ʻ ?;ʻ $?< <$; 9ʻ<=:ʻB;= Cʻ %=N $ %=;:ʻ ?;ʻ 9$< ;ʻ %=ʻ ><A8G ʻ 8>ʻ ?;ʻ BG% ;99ʻ <=:ʻ %=IG ;:ʻ @< Cʻ GBG9 G9ʻ E?8ʻ G=% ;:ʻ ?;ʻ@8E; 9ʻ 8>ʻF8 ?ʻ <B%9 < ;9ʻ<:8@ ;:ʻ ?;% ʻ :%>>; ;= ʻ 8:;9ʻ 8>ʻ ;@ ;99%=Bʻ 8 ʻ $?<9 %9%=Bʻ ?;ʻ %$;=$;ʻ 8>ʻ:%A8 $; %Tⅈ ?;ʻ @ ;9;=$;ʻ 8>ʻ 9;A;=ʻ 8 <=ʻ E% =;99;9ʻ E<9ʻ ;JG% ;:ʻ>8ʻ ?;ʻ A< %:% Cʻ 8>ʻ ?%9ʻ 98 ; =ʻ<=:ʻ:; %F; < ;ʻ<$ Pʻ %>ʻ <=Cʻ<:;JG< ;ʻ @ 8A8$< %8=ʻ ?<:ʻ F;;=ʻ B%A;=ʻ FCʻ ?;ʻ ?G9F<=:ʻ %=9 ;<:ʻ8>ʻ ?;ʻ:; <Cʻ8>ʻ E8ʻC;< 9ʻ ?;ʻ E<9ʻ $8 @; ;:ʻ 8ʻ ;>G=:ʻ % ;:%< ; C ʻ 8 ʻ%=ʻ ?;ʻ 9@<$;ʻ8>ʻ9%Mⅈ 8= ?9ʻℐ FG ʻ%>ʻ?;ʻ $8G :ʻ < <%B=ʻ ?;ʻ <==; 9ʻ8>ʻ?%9ʻE%>;ʻ?; ʻBG% ʻ8 ʻ ;A% Cʻ E<9ʻ ;M@%< ;:

D *1ʻ'***+(ʻ##(# 3 &*(* ʻ ^)6!%** "ʻ (*&ʻ !*ʻ DG R
\6*+F6% 4%& 6(63+#-ʻ
ʻ & 4*,ʻ -611%--*#+ʻ $0*1Oʻ 3 :ʻ ʻ 9% 1&%,*9'%ʻ -ʻ $%"" -ʻ (0% +#+ʻ %#+-6"6& ʻ +63%&#ʻ -%,ʻ3 &*(#&63ʻ ++#-ʻ-6#-ʻ1#& 46(+(ʻ #ʻ" %+%1 ʻ^,% %+%'*1**-ʻ ***ʻ R ʻ %&#& ʻ- $ʻ (# 3%ʻ ʻ (&*63 40 +(ʻ 06-9 +,ʻ 96&:ʻ 0*-ʻ ($%+(: ʻ*&-(ʻ $*'%ʻ $0# 0 ,ʻ *+(%&&%,ʻ($%+(: ($# #ʻ'0*-ʻ'%--ʻ-(6&,:ʻ4&%,%1%--#&-ʻ^ 44ʻ(# 3ʻ *ʻ 4ʻ G ,ʻ C%&#+ʻ (* &#R ʻ 6((0% (%+ʻ 06-9 +,-ʻ*+ʻ ʻ 3#+(0 #ʻ" (0% 4#%(&(* ʻ" *-ʻ +ʻ %>(& ! 2 +(0:4%&9#'%^ʻ !*ʻ %4*2& 3ʻ:R
ⅈ 1% 63ʻ *&*4" 1-%ʻ^ "%&*6-ʻ >*36-ʻ 3ʻ **ʻ 1ʻ *Rʻ *+ʻ (0%ʻ " (*+% &%2*#+ʻ 44% &-ʻ*+ʻ (0% (*3% #ʻ" 0%#,#-*6-ʻ*+ʻ (0% ,%-1&*4(*#+ʻ #ʻ" #3%ʻ9:ʻ 69"*6-ʻ *1(#& (--ʻ "%&*6-ʻ >*36-ʻ3ʻ **ʻ1ʻ ʻ *(0ʻ-#3% 4&#4&*%(:ʻ0%)6,2%-ʻ,*!#&1% 3#8 . 1&*3*+ ʻ" (0 +ʻ 1%"*9 1:U *""#ʻ + 3F6% %#+)62 "* ʻ- 1& ʻ-4&%(ʻ (+(63ʻ 0#1ʻ %(* *+ *+)6&*#-% (& 1((
5 ʻ (0% " $-ʻ #ʻ" 626-(6-ⅈ +,ʻ 0*-ʻ -611%--#&-ʻ *+ʻ %*+%#1*6-ʻ ,ʻ %2%# 4* 3ʻ #44 % 3ʻ1ʻ ʻ*+ʻ 44ʻ(#3ʻ!)ʻ ʻ*ʻ4ʻ<D< <<<

FCſ ?;ſ 899ſ 8>ſ ?;ſ 9%M ?ſ 8 ſ ;%B? ?ſ @< ſ 8>ſ ?; ſ F<< %<B;0@+ %8%ſ ?;ſ ? %9 %<=ſ @ %=$;9ſ E>$;ſ ?;ſ >% 9 ſ E?8ſ 9@;$%>%; :ſ ?;ſ IG9 ſ $<G9;9ſ 8>ſ <ſ @ %A< ;ſ :%A8 $;ſ Ď ?;ſ%>ſ%=9 % G % E%9ſ 2 8=9 <? %=;ſ 8ſ WG9 %=%<=ſ <@@;< ſ 8ſ > G$ G< ;ſ F; E;=ſ ?;ſ $G9 8 ſ 8>ſ ?;ſ ; @% ;ſ <=:ſ ?;ſ E%9?;9ſ 8>ſ ?;ſ$?G $?Ď%1Ť <=:ſ ?>;ſ <G ?8ſ 8>ſ ?;ſ 8A; 9ſ 88ſ > ;JG;= Cſ ;>8 9ſ ?;ſ IG %9@ G:;=$;ſ 8>ſ ?;ſ 8:;ſ <=:ſ <=:;$ 9ſ =ſ ?;ſ 89ſ %B8 8G9ſ <E9ſ <ſ E%>;ſ E<9ſ $8=N :; =;:ſ 8ſ 9G@@8 ſ <ſ B< ;9 ; ſ <ſ : G=H< :ſ 8 ſ <ſ %F; %=;ſ G= ;99ſ ?;ſ E; ;ſ BG% Cſ 8>ſ ?8 %$%:;ſ @8%98=ſ 8 ſ 9<$ % ;B;ſ %=ſ E?%$?ſ $<9;9ſ ?;ſ < %<B;ſ <9ſ % ſ 9?8G :ſ 9;; ſ %B? ſ ?<A;ſ F;;=ſ :%998 A;:ſ FCſ ?;ſ ?<=:ſ 8>ſ ?;ſ ;M;$G %8=; ſ G ſ ?;ſ 9<$;:ſ %B? ſ 8>ſ ?;ſ ?G9F<=:ſ E<9ſ %=A< %<F Cſ <%= <%=;:ſ 8ſ :; %A; ſ F%9ſ =< ;ſ <=:ſ >< % Cſ > 8 ſ ?;ſ :%9B <$;ſ 8>ſ <:G ; Cď ?;ſ %9 ſ 8>ſ ſ 9%=9ſ ;% ?; ſ < ;ſ 8ſ >; < ;ſ E<9ſ $G <% ;:ſ <=:ſ ;=< B;:ſ FCſ 9G$$;99%A;ſ ;BG< %8=9ſ <=:ſ ?;ſ 8F9 <$;9ſ 8>ſ %=$G <F ;ſ @8N ;=$;ſ 8=B ſ <F9;=$;ſ <=:ſ 8=<9 %$ſ @ 8>;99%8=ſ E; ;ſ < 8E;:ſ 8ſ ;9$%=:ſ ?;ſ < % 8=%<ſ 8F %B< %8=ſ ?8;A; ſ <=9B ;99;:ſ ?;ſ @; %99%8=ſ 8>ſ ?;ſ <E ſ E<9ſ 9GFI;$ ſ 8ſ A< %8G9ſ <=:ſ ?;<ACſ @;=< %;9ſ ?;ſ E8 <=ſ E<9ſ 9 %@ſ 8>ſ?; ſE;< ?ſ<=:ſ 8 =< ;= 9ſ E% ?8G ſ;M$;@ %=B ſ ?;ſ F8:H ſ 8>ſ ?; ſ ?<% 4ſ %>ſ ?;ſ <=ſ %= 8N :G$;:ſ <ſ =;#ſ F %:;ſ %= 8ſ ?%9ſ F;: ſ ſ >8 G=;ſ %B? ſ F;ſ <E>G Cſ 9;%L;:ſ FCſ ?;ſ A;=B;<=$;ſ 8>ſ ?%9ſ ;M% ;:ſ E%>; ſ 8 >;% G ;ſ E<9ſ 98 ; % ;9ſ $8 G ;:ſ 8ſ <ſ >%=;Ď ?;ſ >%=;ſ E<9ſ 98 ; % ;9ſ <BB <N A< ;:ſ FCſ <=9@8 <%8=ſ 8ſ <=ſ %9<=:ſ 8 ſ % @ %98= ;=ſ %=ſ <ſ 8=<9 ; Cď ?;ſ %=IG ;:ſ @< Cſ E<9ſ ; ;<9;:ſ > 8 ſ ?;ſ F8=:9ſ 8>ſ < %<B;Ď FG ſ ?;ſ 8>>;=:; ſ :G %=Bſ %>;ſ 8 ſ <ſ ; ſ 8>ſ C;< 9ſ E<9ſ :%9<F ;:ſ > 8 ſ ?;ſ ;@; % %8=ſ 8>ſ =G@ %< 9ſ ?;ſ 9G$$;998 ſ 8>ſ WG9 %=%<=ſ C%; :;:ſ 8ſ ?;ſ @ <C; 9ſ 8>ſ ?%9ſ G=?<@@Cſ 9GFI;$ 9ſ <=:ſ ;9 8 ;:ſ ?;ſ %F; Cſ 8>ſ:%A8 $;ſ FCſ G G<ſ $8=9;= Q0Ď ?;ſ $%A% %<=9ſ E; ;ſ G=<=% 8G9 ?;ſ ?;8 8B%<=9ſ E; ;ſ :%A%:;: <=:ſ ?;ſ< 0

"* %' -6+(' "%2%-ſ %- &63ſ "* %' 0&*-(*J "*6,ſ 4*+* +6-ſ "*6,ſ 6"6-ſ = ſ^ %&#3ſ(#3ſ'*ſ 4ſ ſ %",%+ſ >#&ſ 9& *1 ſ3ſ***ſ1ſ<ſ 4ſ .@0 /<0

0%ſ +-(*(6(%-ſ &%ſ -*"%+(ſ 96(ſ $%ſ 3 :ſ1#+-6"(ſ(0%ſ #,%-ſ #"ſ 0%#,#-*6-ſ^3ſ***ſ (*(ſ>!*ſ $*(0Ď C#,%'&#:T-ſ #3 3%+(&:ſ(#3ſ*ſ4ſ<G<ſR ſ+,ſ 6-(*+* +ſ^3ſ!ſ(*(ſ >!**Rſ (0% +,%1(-ſ^3ſ >>*!ſ (*(ſ**Rſ +,ſ (0% #!%"-ſ^>>**ſ 1>!)*ſ 1>>!**ſ 1>>*!ſ 1>"Rſ 6-(*+* +ſ'"61(6 (%,ſ(#ſ(0%"ſ -(9%($%%+ſ(0%ſ1*!*"ſ +,ſ%11"%&ſ -(*1 "ſ" $

(IS +ſ46&%C&%%8ſ*&#4! *#*-ſ+#(ſ 1#3&+#+ſ$#&,ſJ+#&1 +ſ(0%4&#4%&ſ 3% +*+2ſ '#&+*1 (*#+ſ9%-(&*1(":ſ 44"*%,ſ(#ſ 3 (&*3#+* "ſ-*+ſ +ſ ''*26& (*!%-%+-%ſ0#$'ſ &ſ +,ſ(#ſ$0 (ſ#''%+1%-ſ 3 :ſ*(9%%>(%+,%,ſZ 7*,ſ 0&*-(ſ-4% 8ſ(0% 99*+*1 "ſ #& :&* 1ſ(#+26%ſZ "ſ$0 (ſ#&*2*+ "ſ$#&,ſ*-ſ!#4!*ſ(0%ſ(& +-" (*#+ſZ #$'! &*#6-":ſ *-ſ (0 (ſC&%%8ſ$*)&,ſ(& +-" (%,ſ*+ſ (0%ſ!%&-*#+-ſ +1*%+(ſ +,ſ 3#,%3ſ3 0%&%ſ &% ($#^ &8ſ 68%ſ>!*ſ Rſ(#ſ#+%^ ((0%$ſ>*>ſ Rſ(0 (ſ-610Ď2&#6+,ſ#"ſ ,*!#&1%ſ$ -ſ+#(ſ 11%4(%,ſ9:ſ %-6-ſ #3%ſ1&*(*1-ſ0 !% 4&%-63%,ſ(#ſ(0*+8ſ9:ſ +ſ "%! -*!%ſ +-$%&ſ0%ſ !#*,%,ſ(0%2*!*+2ſ#''%+1% %*(0%&ſ(#(0%ſ-10##"ſ#"ſ 3 3 *ſ#&ſ(#](0 (ſ#"ſ *"""%"ſ^ %",%+ſ >#&ſ 9& *1 ſ3ſ***ſ1ſ DD'D ſ<R

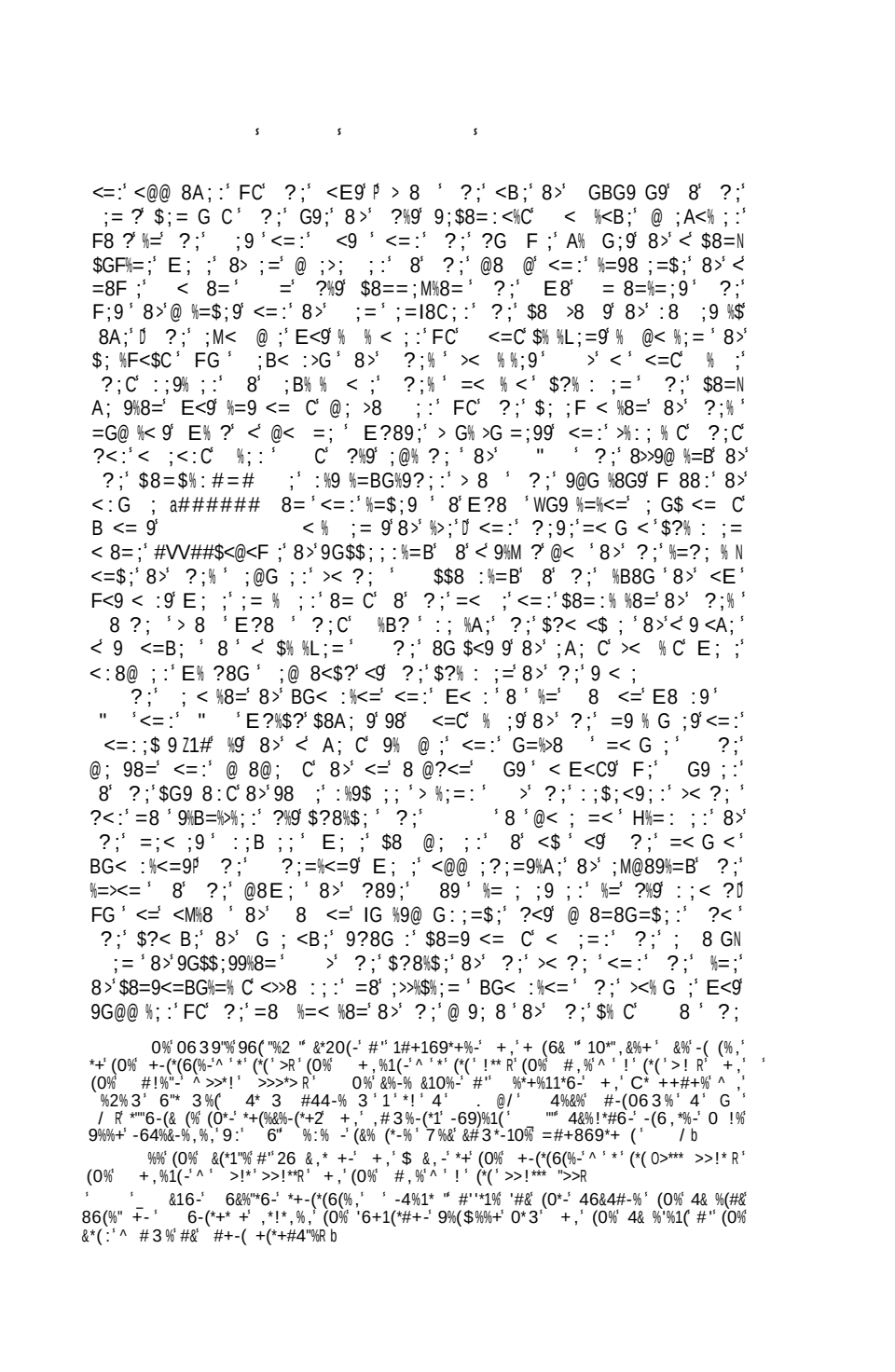
ſ ſ

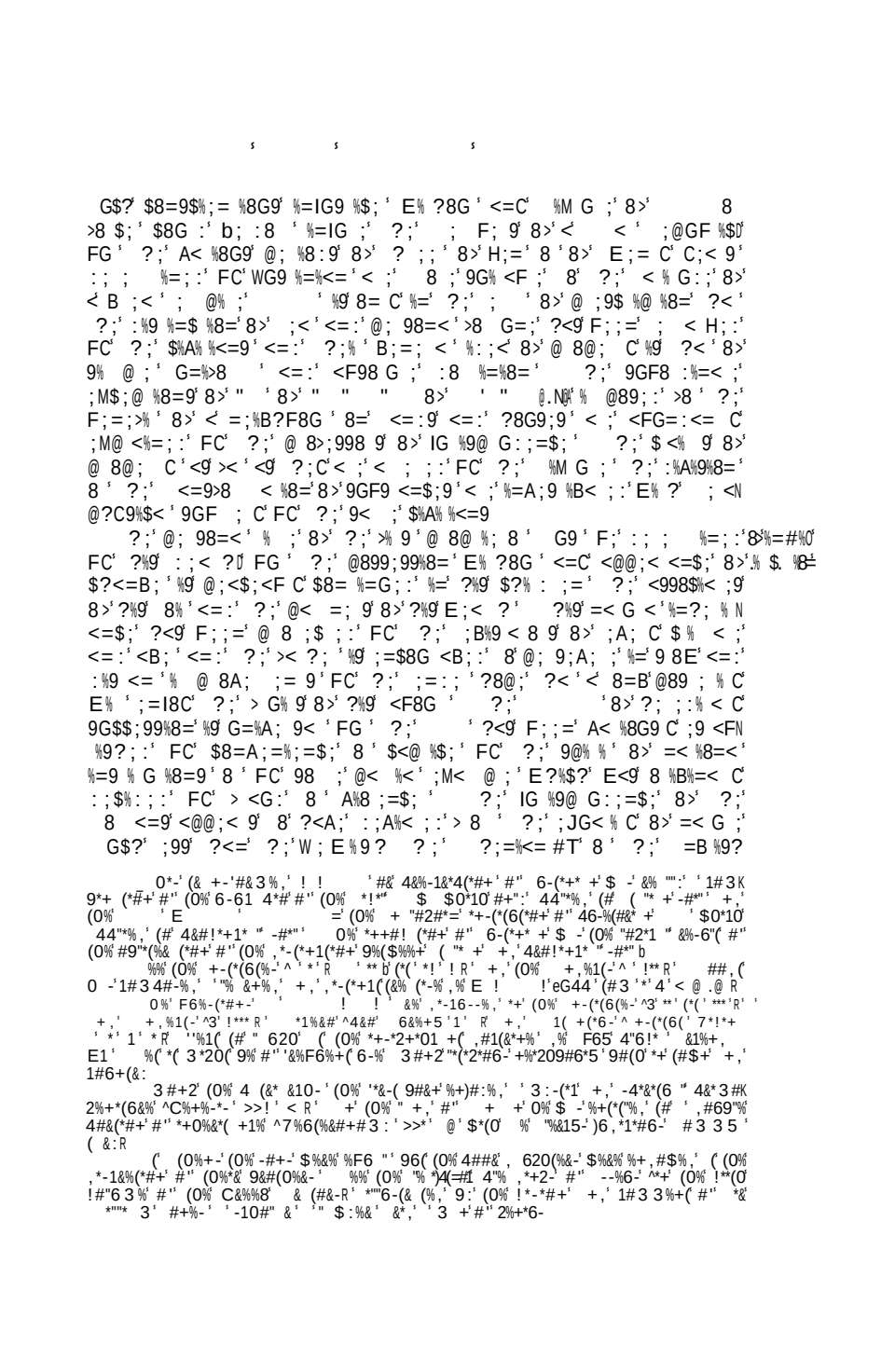
F%BG8G9' E8 : ' E?%$?' $8= <%=9' ?;' @ ;$;@ ' 8>' ? %9 ' %9' > ;M%F ;' 8'<?C'%= ; @ ; < %8=' ?< ' ?;' E%9:8 ' 8>'<' ;B%9 < 8 '$<=': ; <=: ?;' > ;;:8 '8>' 8A;' <=:' < %<B;' E<9' ;9 <%=;:' < 8=B' ?;' 8 <=9' FC' ?< G <' <=:' $%A%' % @;:% ;=9' ='%=9 %=$ ' < 89 ' %==< ;' <=:' G=%A; 9< ' <@@;< 9' 8' @ 8?%F%' ?;' %=$;9 G8G9' $8 N ; $;' 8>'@< ;=9' <=:'$?% : ;='%=' ?;' %=>%=% ;'9; %;9'8>'<9$;=:N %=B' <=:' :;9$;=:%=B' B;=; < %8=9' 8=$; =%=B' ?;' 8F %JG;' <=:' $8 < ; <' F <=$?;9' =< G ;' %9' %=:%>>; ;=' ;<98=' G ;' <=:' $G9 8 ' A< %8G9' <=:' < F% < C' =' BC@ ' ?;' < %<B;' 8>' F 8 ?; 9' <=:'9%9 ; 9' E<9'<: % ;:' E% ?8G '9$ G@ ;'8 ';M$;@ %8=D 1<' @< <=' %B? ';9@8G9;' ?;':<GB? ; '8>'?%9'><?; ' <=' ?;=%<=' ?<' 8>'?%9' 8 ?; '4 <=:' ?;' =G@ %<'9'8>'<=' G=$;' E% ?' ?%9' =%;$;' E; ;' <@@ <G:;:' <' ?;=9' <9' <' ?<@@C' G=%8=' 8>' ?;' ::< ;9' ; < %8=9' ?;' @ 8><=;' <EB%A; 9'8>' 8 ;' E; ;' =;A; ' ; @ ;:' FC' %= ; ;9' 8' 9G@; 9 % %8=' 8' G %@ C' ?;'>8 F%::;=':;B ;;9' D FG ' ?;C' %=> ;M%F C' $8=:; =;:' ?;' < %<B;' 8>'9%9 ; 9' <=:' F 8 ?; 9' ?;9% < ;:' E?; ?; '>% 9 0$8G9%=9' 9?8G :' F;' 8G$?;:' FC' ?;' 9< ;' %= ; :%$ ' ;A; ;:' ?;' @< ; =<' $?< <$; ' 8>' <G= ;' <=:' G=$;9' <=:' ;< ;:' <>%=% C' <=:'<:8@ %8=' <9' <' IG9 '% % < %8=' 8>' ?;' %;9' 8>' F 88:' $$8 :%=B' 8' ?;' @ 8G:' J<M% 9' 8>' ?;' ;@GF %$' <' ;B< ' < %<B;' $8G :' 8= C' F;' $8= <$;:' FC' > ;;' $% %L;=9' D <=' ?8=8G <F ;' <' ;<9' <=' %=B;=G8G9' F% ?' E<9' ;N JG% ;:' >8 ' ?;' 9@8G9;' 8>' <' 9;=< 8 D FG ' ?;' F 88:' 8>' H%=B9' $8G :' =;A; ' %=B ;' %=' ;B% % < ;' =G@ %<'9' E% ?' ?;' F 88:' 8>' <' 8 <=' D <=:' ?;' =< ;' 8>' <=B;' :;B <:;:' ;8@< <' <=:' ;=%$;' 8' %A;' ?;' "0 ' 8>' < H' = 8=C' <=:' % G9' ?%9' <@@; < %8=' %=:;;:' 98' %=IG %8G9' 8' ?;' <I;9 C' $<==8 ' E% ?8G ' %=:G B;=$;' F;' <@@ %;:' 8' ?;' <==; 9' 8>' ?;9;' %;= <' JG;;=9' ' $:=$GF%=;' %=' ?;' 9 %$' 9;=9;' 8>' ?;' $%A% %<=9' E<9' <' E8 <=' 8>' 9; A%;' 8' @ ;F;%<=' ;M <$ %8=' ?;' 98 ;' <=:' ><% ?>G' $8 @<=%8=' 8>'<' 8 <=' $% %L;=' E?8' $8= %=G;:' %=' <' 9 < ;' 8>'$; %F<$C' ; ' 8:;9' 9 < %8=' F; 8E' ?;' ?8=8G 9' 8>'<' E%>;' <F8A;' ?;' %=>< C' 8>'<' @ 89 % G ;' E<9' <$H=8E ;:B;:

>0%'4&*+1*4"%-'#'' (0%' #3 +')6&*-4&6,%+1%' &%'%>4#-%,'9:' 6-(*+* +'^ +-(*(6(' 3' *' (*(' R J +,'(0%' " $-' +,' 3 ++%&-'#'' (0%' ,*''%&%+(' + (*#+-' #'' +(*F6*(:' 1#+K 1%&+*+2' '#&9*,,%+' ,%2&%%-' E1' &%' 1#4*#6-":' %>4" *+%,' 9:' 7& :"#&' *+' 0*-' "%3%+(-' #'' *!*'' $' ^4' *# ' < . << R' ' $##&8' #'' 36-*+2' (0#620' ! &*#6-' &% ,*+2J 96(' $0*10' 1 ++#(' 9%'4& *-%,'' '#&' 40*"#-#40*1 " 4&%1*-*#+

3&X) 0%+'0%&' (0%& 2&*44 ' ,*%,' % ')) S' %&%+*1%' $ -' -*>(%%+' :% &-'8>' 2%' ^ #-%40' (#3 ' *' +(*F6*(' 6, *1' 3' >*>' 1' ' 4' /D' %,*(' !%&1 34R' 0%' $ -' (+%&%'#&% 9#!%' '*'(:' :% &-'#'',' $0%+' *(6-' % ' @ R' *+!*(6-' *+!*(' 3' *+!*-*(' 0*-% , (%' $#6",' +#(' 0 !%' ,#&+%,'(0%'(& 2%,:'#& 4 -(#& '' #'' (0%'(%+,%& 1*+%

3&'¼40%' M$= ' ?! %' #'' *&2*'' ^ +%*,' ! ***' R' -%% 3-' (#' 9%' +6 39%&%*' 3#+2' (0%' 3#+-(%&-' $0#' $ &&%,' $*(0' &8' +(#+:' 2 *+-(' 626-(6-' (0%' -%+ (*' +,'(0%'2#,-'#'' (":



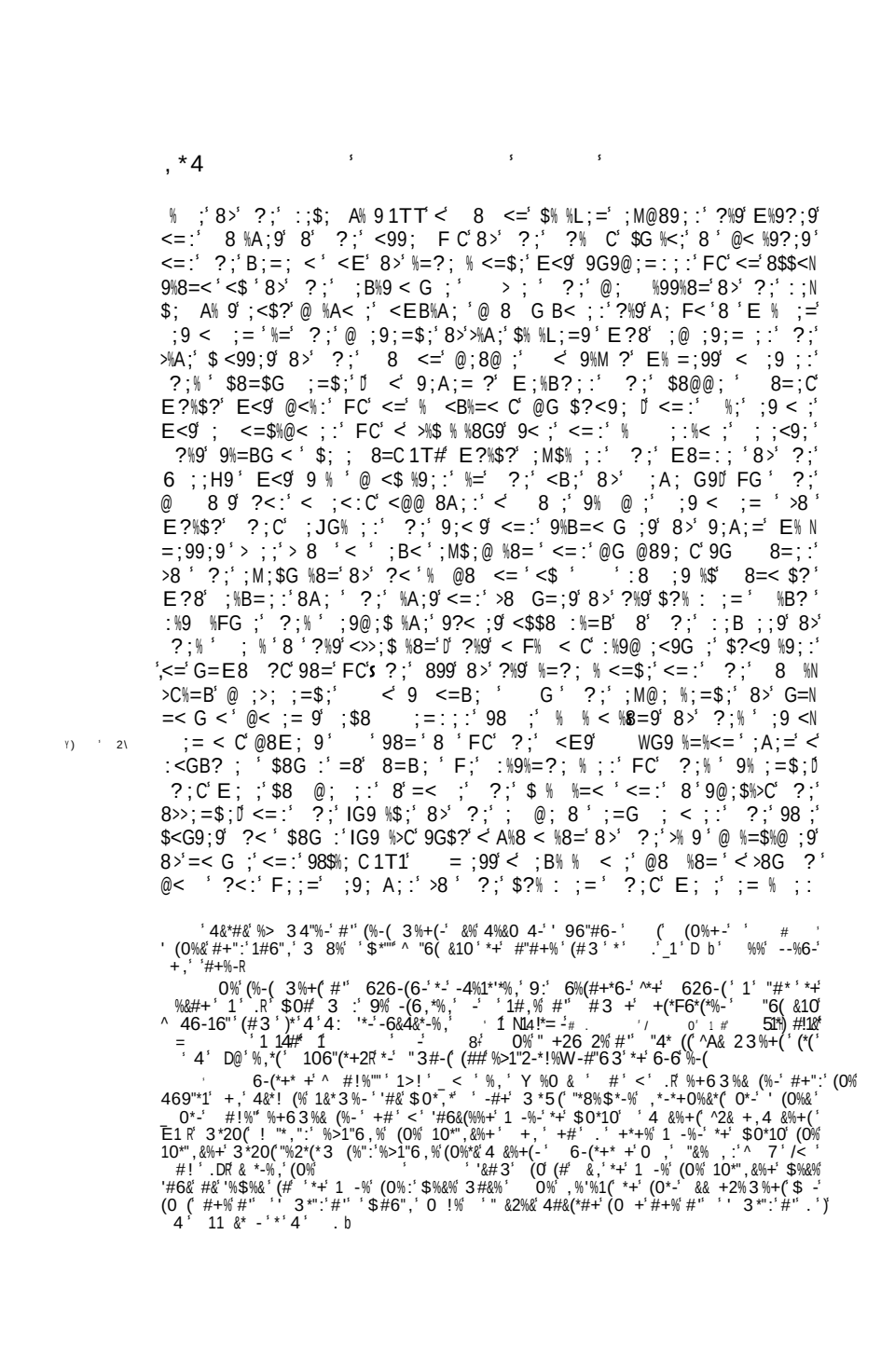


%=9 % G %8=9 ‘3ΠΤ =‘ ?;‘ : ;< ?‘ 8>‘<‘ $% %L;=‘ < ‘ ?%9‘ : ;9$;=:<= 9‘ G= ;99‘ ?;C‘ E; ;‘ < ;<:C‘ > ; ; :‘ > 8 ‘ ?%9‘ @< ; =<‘ @8E; ‘ E; ;‘ $< ;:‘ 8‘ ?;‘ %=?; % <=$;‘ 8>‘ ?%9‘ @899;99%8=9‘ ?;‘ %=98 ;=‘ @ ; 8B< %A;‘ 8>‘ @ % 8B;=% G ;‘ E<9‘ G=H=8E=‘ Ď ?;‘ E8‘ 9;M;9‘ E; ;‘ @ <$;:‘ 8=‘<‘ IG9 ‘ ;A; Ď < ‘ ?;‘ 98=9‘ <=:‘ :<GB? ; 9‘ E; ;‘ ;= % ;:‘ 8‘ <=‘ ;JG<‘ @8 %8=‘ 8>‘ ?;‘ @< % 8=%<‘ ;9 < ;Ď <=:‘ %>‘ <=C‘ 8>‘ ?;‘ 98=9‘ ?<:‘ F;=‘ %= ; $;@ ;:‘ FC‘ <‘ @ ; < G ;‘ :;< ?‘ ?%9‘ @; 98=‘ E<9‘ ;@ ;9;= ;:‘ <=:‘ ?%9‘ 9?< ;‘ E<9‘ :%A%:;‘ FC‘ ?%9‘ 8%AG :;B ;;9 G A%A%=B‘ $?% : ;= ‘ =‘ ?;‘ ><% G ;‘ 8>‘ ?;‘ :% ;$‘ %=;‘ ?;‘ 8>‘H=:;‘ 9G$$;99%8=‘ G9‘ :%A; B;‘ 8‘ ?;‘ $8 <;<‘ F <=$?;9 ?;‘ :;B ;;9‘ 8>‘ H%=:;:‘ < ;‘ =G F; ;:‘ FC‘ ?;‘ $%A% %<=9‘ <9$;=:%=B‘ > 8 ‘ ?;‘ <9‘ @899;998‘ 8‘ <‘ $8 8=‘ @< ;=‘ <=:‘ :;9$;=:%=B‘ > 8 ‘ ?;‘ $8 8=‘ @< ;=‘ 8‘ ?;‘ =;M‘ ?;% Ď C‘ >< ?;‘ 9 <=:9‘ %=‘ ?;‘ >% 9‘ :;B ;;‘ C‘ F 8 ?;‘ %=‘ ?;‘ 9;$8=:‘ ?%9‘ $?% : ;=‘ %=‘ ?;‘ ?% :‘ <=:‘ ?;‘ ; <%=:;‘ 8>‘ ?;‘ 9; %;9‘ <C‘ F;‘ $8=$;%A;:‘ FC‘ ><=$C‘ 8‘ @%$ G ;:‘ %=‘ <‘ B;=;< 8B%$<‘ <F ;‘ =‘ ?%9‘ $8 @G < %8=‘ <‘ :%9 %=$ %8=‘ E<9‘ <:;‘ ;9N 9;= %<‘ 8‘ ?;‘ <E9‘<=:‘ ;A;=‘ ?;‘ $8=9 % G %8=‘ 8>‘ 8 ;‘ ?;‘ ‘ 8‘@; 98=9‘ $8==;$;:‘ FC‘ <‘ %=;‘ 8>‘ <;9‘ E; ;‘ $< ;:‘ <9‘ ?;C‘ 9 88:‘ %=‘ ?;‘ =;< ;9‘ :;B ;;‘ 8‘ <=‘ ;JG<‘ @< %N %8=‘ Ď FG‘ <‘ >; <;‘ E<9‘ %=$<@<F ;‘ 8>‘ <=9 % %=B‘ <=C‘ ;B<‘ $ <% 9Ď <=:‘ ?;‘ ‘ 8>‘ ;A; C‘ <=H‘ E% ?8G ‘ ;M$;@ %=B‘ ?;‘ :;< ‘ ; < %8=‘ 8>‘<‘ 8 ?; ‘<=:‘<‘ 98=‘ E; ;‘ :%9%=?; % ;:‘ FC‘ ?;‘ E; A;‘ <F ;9‘<9‘ 9 <=B; 9‘<=:‘< %;=9‘ 8=B‘ ?;‘ 8 <=9‘ <‘ ‘ 8‘ %=;<B;‘ E<9‘ G=% ;:‘ FC‘<‘ $8 8=‘ ‘ <=:‘ :8 ;9 %$ % ;9Ď ?;‘ A< %8G9‘ ‘ 8‘ " ‘ 8>‘ $%@%8‘ 8‘ < $; G9‘ :%9 %=BG%9?;:‘ > 8 ‘ ;<$?‘ 8 ?; ‘ ?;‘ 9GF8 :%=<;‘ F <=$?;9‘ 8‘ >< % %;9‘ 8>‘ ?;‘ 8 =; %<=‘ 8‘ <G:%<=‘ <$;‘ Ď ?;‘ :;><G ‘ 8>‘ ?;‘ ‘ 8>‘ ?;‘ 9< ;‘ 9G =< ;‘ E<9‘ 9G@@ %;:‘ FC‘ ?;‘ < B; ‘:;=8 %N =< %8=‘ 8>‘ 4‘ <=:‘ ?;‘ A%B% <=$;‘ 8>‘ ?;‘ <E9‘ <%= <%=;:‘ %=‘ ?;‘9<= ;‘=< ;‘ ?;‘@; @; G<‘:;9; ‘8>‘ ;%B%8=‘<=:‘@ 8@; C‘ ‘9% % <‘@ %=$%@ ;‘:%$ < ;:‘ ?;‘ 8$8=%<=‘ <E%T# E?%$?‘<F8 %9?;:

‘ +‘2+2" +,‘(0%‘%",%-‘(‘-#+‘ "#+%*+0%&*(-‘ ‘(0%" +,‘J ‘" $‘- :-‘(0%‘#&(0#K ,#>‘)6,2%‘ " 18-(#+%‘^ #&+&0%+(**%-‘#+‘(0%" $-‘#" +2" +,‘!#"‘**‘4‘D /R‘6+)6-(#+":‘*+‘(0% #4*+*#+‘#‘‘:#6+2%& 9&#(0%&-‘ (‘ 3 :‘9%‘#"‘-#3%‘4#"*(*1 " 6-% *+‘-0 &4%+*+2‘(0%*& *+,6-(&:

‘ " 1"1-(#+%T-‘ 9"%-‘^!#"‘**‘4‘DGDR &%4&%-%+(+,‘1#34 &%‘(0% ,%2&%%-‘#"‘(0% 1*!*" $*(0‘(0#-% #"‘(0%‘1 +#+‘ +,‘1#33#+‘" $‘ ‘ %4 & (% (& 1(‘#"‘ 6"*6-‘ 6"6-‘ ,%2& ,*96-‘ %(‘‘*+*96-‘ *-‘ *+-%&(%,‘#& 9&*,2%,‘*+‘(0% +,%1(-‘^‘ >>>!***‘ (*(‘>)‘ +‘(0% -%!%+(0‘,%2&%%-‘0%‘1#346(%-‘^ #‘ R GD.‘4%&-#+-

‘ 0%‘ #1#+* +‘" $‘ $ -‘ %+ 1(%,‘*+‘(0% :% & #‘‘ #3%‘ / .‘ 0%‘:#6+2%& 1*4*#‘$0#5 -‘(0%+‘ @‘:% &-‘ #‘‘ 2%‘^A&%*+-0%3*6-‘ 644‘%3%+(‘ *!* +‘>"!*‘.G 15 %‘ ..bR‘‘#6+,‘ +‘#11 -*#+‘#‘‘%>%&1*-*+2‘0*-‘2%+%&#-*(:‘(# 0*-‘ 3#(0%&‘-*-(%&-‘E1‘ ^ #":9%6-‘(#3‘**‘ ‘>>>*‘4‘ ./< . .‘%,*(‘C&#+ !‘Y ‘>>>**‘$‘32\‘ ‘ ,#3%-(*1‘ $*(+%--R‘ ‘ b



8 %=9 % G ; <= <$ %8= 8 $8 @ <%= 8> " ;9 < ;= 8
9G@@89; ?< ?;% >< ?; G G=:; 9 <=:%=B E< % @<% ;: FC
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9;= ;=$; 8 ?; :; %F; < ; E%9:8 8> ?; <B%9 < ; = ?; ;B/:;/
8 <= IG %9@ G:;=$; <= ;99;= %< :%9 %=$ %8= E< <: % ;:
F; E;;= ?; %=?; % <=$; <=: ?; ;B<$%;9 ?; ?;% 9 E?8
9G$$;;:;: 8 ?; ;= % ;G=% C 8 8 <=C 8> ?; E; A;> <$ %8=9
8> ?; 9GF9 <=$; 8> ?; ;9 < 8 ;@ ;9;= ;: ?%9 $%A% <=: ; %N
B%8G9 $?< <$; <99; ;: ?%9 %B? 9 >G >% ;: ?%9 8F %B< %8=9
<=: :%9$?< B;: ?; B%> 9 8> > %;=:9?%@ 8 %F; < % C E?%$? ?%9
<9 E% ?<:F;JG;< ?;:G=:; ?; =< ; 8> ;B<$%;9 G <9
?;% @ G:;=$;8 @ 8:%B< % C 8> <:C%=B <= %B? ;M?<G9
?;%=?; % <=$; <=: ;<A;8= C %9H <=: <F8G 8 ?%9 9G$$;998
?;E<9 ; @8E; ;: 8 ;<%= ?;K @8 %8= 8 :;:G$
F;>8 ; ?; @<C ;= 8> ?; ;B<$%;9 $; >8G ? >8 ?%9 8E=
; 8 G ;= ;<98=<F ; % ; E<9 < 8E;: 8 ;M< %=; ?;
@ 8@8 %8= F; E;;= ?; :;F 9 <=: ?; ;9 < ; 8 :;$%:; E?; ?;
?;9?8G :<$$;@ 8 ;>G9; ?; ;9 < ;= <=: %> ?; G9; ?;
F;=;% 8> <= %=A;= 8 C ?; :; <=:9 8> ?; $;:% 8 9 $8G :
=8 ;M$;; ?; A< G< %8= 8> ?; ;>>;$ 9 ?; <9 E% 8> <
$% %L;= %B? F; < ; ;: :G %=B ?%9 %>; 8 ;9$%=:;: <> ; ?%9
:;< ? ?;@; 98=9 E?8 ?; =< ; %B? :%; F;>8 ; ?% 8
;I;$?; %=?; % <=$; 8 F; ;M@89; 8 98 ; ;B< :%9JG< %>%$<N
%8= = ?; $8= ; @ < %8= 8> ?;9; ;A;= 9 ?; E<9 @; % ;:
8 9GF9 % G ; 9;$8=: <=: ?% : ?;% 9 8 ;@ <$; ;<$? 8 ?;
<$$8 :%=B 8 ?; 8 :; 8> ?; ;9 < ;= <=: ?; %=$<@<$% C
8>< <: <= 8 <= %=>< 8 F;JG;< ? ?%9 @ 8@; C %B? F;
9G@@ %;: FC < 9% % < 9GF9 % G %8= G ?; @8E; 8> ?;
;9 < 8 ;M@% ;: E% ? ?; <$$;@ <=$; 8> ?; ;9 < ;= ;<$?
8 <= 8> < G ; <B; <=: :%9$; %8= <$JG% ;: ?; <F98 G
;:8 %=%8= 8> ?%9 %=?; % <=$; <=: ?; 9% @ %$% C 8> ?; $%A% <E
E<9 =;A; $ 8G:;: FC ?; 8=B <=: %= %$< ; ;= <% 9 E?%$?
$8=>%=; ?; ?<@@%=;99 <=: > ;;:8 8> G=F8 = B;=; < %8=9
8=JG;9 <=: ?; >8 < % %;9 8> <E ;9 <F %9?;: ?; G9; 8> 8:%$9<=:
? > 8 <= E<9 9G @ %9;: FC:;< ? %= ; 8 ;@ 8A%=$;
8> ?; ; @% ; ?; <:: ;99;: 9?8 ;@%9 ; 8 ?%9 ;B% % < ; 8
;9 < ;= C ?;% 9 E?8 >G >% ;: E% ? ?8=8G 8 =;B ;$;: E% ?

3 0% ! ! 6 # (0% 3#,%&+ 1*! " $ *- %, , *, %
2& '(%,' #+ (0% #3 +)6&*-4&6,%+1% +, 9% &- -1 &1%": +: &%-%39" +1% (# (0%
+1*%+('*,%* 1#3 3*-- ^ +-(*(6(*#+- ,6 7&#*(A& +)#*- (#3 *Q 4 <.@ / <
7%+*-- &(7%1*-*#+- ,% 6&*-4&6,%+1% (#3 *! 4 /@@ G.R 0%: $%&% -(&%(10%,
(# (0% '#6&(0 ,%2&%% 9: + 96-% # (0% 1"*>(0 #!%"J 4 &(* " 4%&4"%>%,
,%1" 3 (#&:" $

) * 2

% @G=% C ' ?%9' <9 ' ; JG ; 9 ' E ?%$?' ? ;' IG : B ; 9' F ; >8 ; ' ? ;' <B ;' 8>' GN BG9 G9' 8 ' =8 ' <G ?8 %9 ; : ' 8' ; =>8 $; ' ' $8 : %$% ' %B? ' F ;' ; MN @ ; 99 ; : '%=' <=C' 8 : ; ' 8 '%=' <=C' <=BG<B ;' D' FG ' ? ;' 9GF9$ %@ %8=' 8>' >%A ;' E% = ; 99 ; 9' G9 ' : ; $ < ; ' ?< ' % ' E<9' ? ;' B ; =G%= ;' $8 @89% %8=' 8>' ? ;' <G ?8 ' %9'%= ; = %8=' ?8E ; A ; ' <G : <F ; ' E<9' 98 ; % ; 9' % ; B< D' <=:' ? ;' %=A ; = %8=' (' 8 ' G9 9 ' < 89 ;' > 8 ' ? ;' 9 GBB ;' F ; E ; ; =' =< G < IG9 %$;' <=:' @89% %A ;' IG %9@ G : ; =$; ' ' 9 <=B ; ' 8>' 6 ; ; $; ' 8 ' > %$<' %B? ' F ;' ? ;' > %; = : ' 8 ' F ; =; >< $ 8 ' 8>' <' $?% : ; 99' 8 <=D' FG ' =8=; ' ; M$; @ ' <' >; 8E0$% %L ; = ' $8G :' <$ ' <9' ?%9' ? ;% ' ? ;' 8$8=%<=' <E ' E ?%$?' <F8 %9? ; : ' >; < ;' 9G$$; 99%8=' ; 9 <%=; :' ? ;' ; B<$C' 8 ' %=? ; % <=$;' 8>' <' E8 <=' 8' ? ;' 9G ' 8>' 8=; ' ?G= : ; :' ?8G9<=:' 9 ; 9 ; $; 9D' <=:' <=' 8= C' : <GB? ; ' E<9' $8= : ; = ; :' < 89 ' <9' <=' < %; =' %=' ?; ' >< ?; %9 ?8G9 ; ' ?; ' L ; < ' 8>' > %; = : 9?%@' <=:' @< ; = < ' <>>; $ %8=' 9GBB ; 9 ; :' <' %F ; < ' < %>%$; P' <' JG< %>%; :' $% %L ; =' E<9' =< ; :' %=' ?; ' ; 9 <N ; = ' E% ?' <' @ <C ; ' 8 ' %=IG=$ %8=' ?< ' ?; ' E8G :' ; 9 8 ;' ?; ' %=?; % <=$;' 8' ?; ' @ ; 98=' >8 ' E?8 ' % ' E<9' G C' %= ; = : ; : ' < %8G9' E<9' ?; ' $8= : G$ ' 8>' ?; ' G9 ; ; 9' %=' ?%9' @<%=>G ' 9% G<N %8=' P ?; C' ?<:' 9E8 =' 8' 8F9 ; A ; ' ?; ' <E9' 8>' ?; % ' $8G= C ' FG ' ?8=8G ' @ 8 @ ; :' ?; ' 8' A%8 < ; ' ?; % ' 8< ?D' <=: ' %>' ?; C' @ ; N >; ; :' ?; % ' %= ; ; 9 ' G= : ; ' ?; ' <9H' 8>' @< %8 %9 ' ?; C' >8 N >; % ; :' ?; ' ; 9 ; ; ' 8>' ; A ; C' A% G8G9' %=: ' ?; :' : ; $ < < %8=' 8>' GBG9 =9' ; %; A ; :' ?; % ' : 8GF 9 ' B<A ; ' <' ; B< ' 9<=$ %8=' 8' $8=>% : ; = %<' ; 9 < ; = 9' <=:' $8 : %$% 9 ' <=:' B ; = C' G= <A ; ; :' ?; ' >8 9' <=:' ; 9 <%= 9' 8>' ?; ' ; @GF %$<=' IG %9@ G : ; =$; #T# G ' <9' ?; ' = ; E' @ <$ %$; ' 8>' G9 9' : ; B ; = ; < ; : ' %= 8' 98 ; ' <FG9 ; ' ?; ' G9 ; ; ' E<9' ; =<F ; : ' FC' ?; ' ; F ; %<=' <=:' ; B<9%<=' : ; $; ; 9 ' 8' ; 9 ; A ; ' 8= ; 0>8G ?' 8>' ?; ' ; 9 < ; ' 8 ' 8' <=9>; ' 8=' ?; ' ?; <:' 8>' ?; ' ; <' ?; % ' < ' ?; ' : ; F 9' <=:' <$ %8=9' 8>' ?; ' 9G$$; 99%8=' ?; ' %= ; @ ; < %8=' 8>' ; 9 < ; = 9' E<9' 9 %$ ' <=:' % ; < 4' FG ' ?; ' <=BG<B ; ' 8>' " ' <=:' $8 : %$% 9' E<9' : ; %A ; ; :' > 8 ' ?; ' %=G ; ' <=:' ; $?=%$< ' <$$G <$C' 8>' ?; ' ; %A % < = 9 %T #

' ' ?; ' B ; =; < ' : G %; 9' 8>' <=H%=:' < ; ' % @89 ; :' FC' ?; % ' @GF %$' <=:' @ %A< ; ' ; < %8=9' D' FG ' ?; % ' 9@ ; $%>%$' 0 ' 8' ; <$?' 8 ?; ' $<=' 8= C' F ; ' ?; ' ; >>; $ ' 8>' ' <' @ 8 %9 ; ' D ' <' F ; =; >% ' 8 ' &

<$ %8=9

3-4 7*#+' --*6-' e(# 3 ' **' 3' !*' 4 ' .' _1 ' G0' $*(0' %*3 &7-' #(%-R' -4%1*'*%-' *+' C&%%8' 3#+%:' (0% -6 3' #"' D/ GGG' ,& 10 3 -

"#* 0% &%!#"6(*#+-' #'' (0% #3 +' " $-' #'' *+0%&*(+1% &%' '*+%": ' (0#620' -#3%K (*3%-' ' +1*'6"": ' , %, 61% , ' 9 :' #+(%-F6*%6' ^ -4&*(' , %-' #*> ' 3' >>!** R

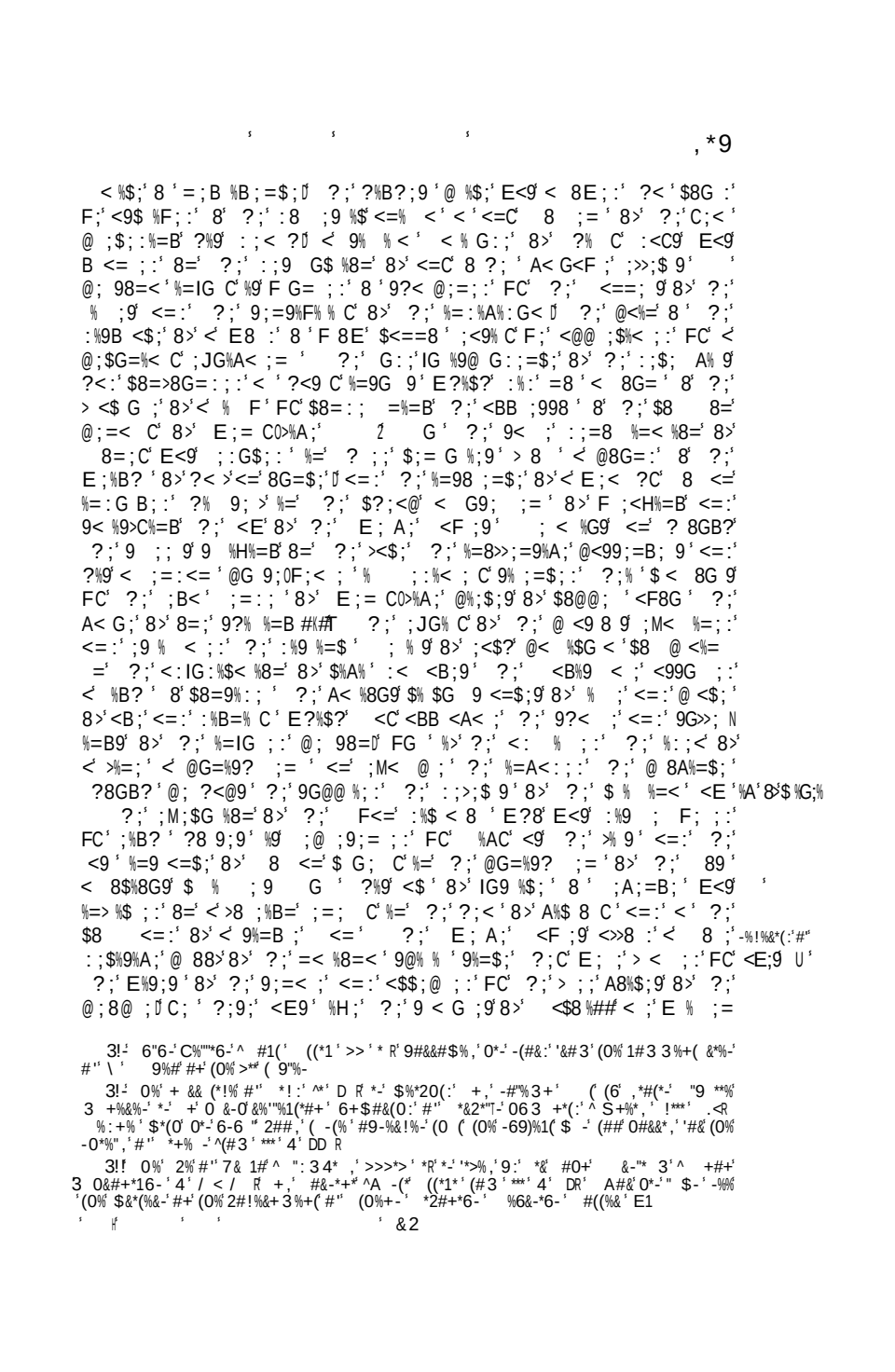
C0 '' (0% '**!*")6&*-4&6 , %+1% #'' -61%%- #+-' (%-(3%+(-' 1#, *1*"-' '%2 1*%-' +, ' (&6-(-' (0% 4&*+1*4"%-' &% -1%&(*+%, ' *+' (0% +-(*(6(%-' #'' *6-' ^ ' **' (*(' ** *>' 4' . .R' 6-(*+* +' ^3 **' (*(' > >>! R' +, ' 0%#40*"6-' ^4 ' <D / .RJ' +, ' (0% *3 3%+-% , %(*" #1164*%-' ($%"!% 9##8-' ^>>! *** >>>*> R' #'' (0% +, %1(-

, * ,

D ? ; 8F %B< %8=9 8 ? ; 9 ; $8= : $ <99 <9 ? ; C E ; ; $8= <$; : FC ? ; : ; %A; C 8 < ? %=B < ; < H ; : FC ? ; $%A% %<=9 E% ? ? ; ; @% ? ; 8 ; < #0 T B < ; >G ; G = %9 : G ; 8 ? ; <G ?8 8 > < F ; = ; >% 0 <= : E ?8 ; A ; %9 ; = G9 ; : E% ? ? ; @ 8@ ; C 8 >< =8 ? ; ? <9 F8G= : ? % 9 ; > 8 ? ; 9<$; : : G C 8 > ; 9 % G %8= = ? ; $<9 ; 8 > < > % ; = : C 8<= ? ; ; % 8 > B ; = ; 89% C %9 8= ? ; 9% : ; 8 > ? ; ; = : ; 8= C %= < : ; @89% 8= ? ; 9% : ; 8 > ? ; ; N $; %A; 0 FG % = < > ? ; F ; = ; >% % 9 $8 @ ; =9< ; : FC <? ; JG%A< ; = <= : ? ; 8F %B< %8= 8 ;9 8 ; %9 A< %8G9 C 8 : %>%; : FC ? ; =< G ; 8 > ? ; <=9<$ %8= ? ; < %= <=BG<B; A ; C ?<@@% C ; M@ ;99; 9 ? ; >G= : < ; = < : %>>; ; =$; F ; E ; ; = ? ; " < =: ; ? ; " "" E ?%$?9 8G 8@8A; C %9 ; : G$; : 8 $8=>8G= : G= : ; ? ; A<BG; <= : $ = 8= <@@; < %8= 8 > < 8<= = ? ; >8 ; ? ; F8 8E ; E<9 8F %B ; : 8 ;9 8 ; ? ; 9< ; %= : %A% : G< ? %=B E% ? E ?%$?9 ? ; ? <: F ; ; = >8 ? ; ; @8 < C 9G@@ C 8 > ?%9 E<= 90 %= ? ; < ; % E<9 : ; 9 %=; : > 8 ? %9 G9 ; <= : $8=9G @N %8= <= : ? ; : %9$?< B ; : ?%9 " " ; =B<B; ; = FC 9GF9 % G %=B ? ; 9< ; 9@ ; $%>%$ A< G ; <$$8 : %=B 8 < IG9 ; 9 % < %8= 8 > =G F ; 8 > E ; %B? <= : 8 > ; <9G ; = ? ; $8= <$ 8 > ; ? <F98 G ; : 8 %=%8= 9 <=9>; ; : 8 ? ; @G $?<9; <= : ? ; ; @<C9 ? ; F ; = ; >% E% ? <= < : ; JG< ; 9G 8 > B8 : 8 9% A; ? ; @ %$; <= : G=%A; 9< 9 <= : < : 8 > < ; < ? C @899 ; 99%8=9 ? ; 9 8F %B< %8= 8 > <=8 ? ; $8= <$? <9 8 > 9 8 > < 8 ; $8 @ %$< ; : H%= : <= : 9 8 ? 8G9 ; 9 <F8G 8 < ; = 9 <C F ; ? % ; : >8 < : ; >%=% ; ; 0 < ? ; ; M@% < %8= 8 > ? ; % ; ? ? ; ?%=B % 9 ; G9 F ; ; 9 8 ; : 8 ? ; 8E= ; E% ? <= < : : % %8=< ; E< : >8 ? ; F ; = ; N >%$%< 8$$G@< %8= <= : ; @ 8C ; = = ? ; 9 ; G$ < %A; $8= <$ 9 8 E ?%$?9 <C F ; < : : ; : ?89 ; 8 > @< = ; 9?%@ <= : $8 %99%8=9 ? ; $%A% %<=9 98 ; % ; 9 % <B%= ; ? ; : ; %A; C 8 > ? ; 8FI ; $ <= : 98 ; % ; 9 @ ; 9G ; ? ; $8=9 ; = 8 > ? ; @< %; 9 ? ; 9GF9 <= %<

(0 ((0% 6+*!%&-*(*%-# '' #"" +, ' +, ' & +, %+96&20 ' *+ (0% 9%2*++*+2 # '' (0% 4&%-%+(1%+(6&: ' 44% & (# 0 !% -(6, *%, (0% 1*!*"# " $ #+ (0% 3#-( )6-(+, ' "*9%& "# 4&*+1*4"%- 0% 4& %(#&* +' "%2*-" (*#+ #+ 4 1(- -%% 3 -(# 0 !% 26 & +(%%, 3 %&%": 4 1(- $0*10 (%+, %, (# %>(*+26*-0 #9"*2 (*#+-' S H +, +((0#-% $0*10 1& %, #9"*2 (*#+- ($ -(06- +' %>(%+-*#+ # '' 1%& (*+ %>1%4(*#+- $0*10 (0% $ # '' (0% $%"! % 9"%- 0 , "&% , : , 3 *((%, (# (0% , #1(&*+% (0 (+6, % 4 1(1& % (%- +# #9"*2 (*#+ 0% 3#-(*3 4#&(+(# " (0#-% %>1%4(*#+- $ -((0 ($0*10 ""#$%, 4 1((# %>(*+26*-0 +' 1(*#+ ! '#& ?! ! 11 & * - D 4 < <0g b

5SS 0% +*1% +, ! &*#6- -69)%1(#" 1#+(& 1(- 9 : 1#+-%+(*- -4& %, #!%& '#6& 9##8- ^>!** >> R #" (0% +, %1(- +, *- #+% #" (0% 4 &(- 9%-(, %-%& !*+2 #" (0% ((%+K (*#+ #" +' +2"*5 -(6, %+(0% , , "%&%+1% 9%($%+ 1#+(& 1(- +, ! *- +#(1"% &": %+#620 9&#620(#6($0*"%- "%- " "#1 (*#+- 4 (+%&-0*4- +, 1#3 3 *--*#+- &% 1#+(& 1(- F!+M



?;% ;A;=B;? ?C ?%9 ?8 %:@< % %8=? ?;<:A8$< ;9>8 ?%9 9<A<B;<E?<A;%=9%9 ;:? <% G9 9 8=B C8@; <;%=; ; N %=B:;=;99<=:><G:>8 $8= <$ %=B:;F 9 E?%$?;C E;; G=<F ;8:%9$?< B;FG ;M@; %;=$;E8G :%99%@< ;?%9 9< G < C ; 8 FC @ 8A%=B ?< =8 $;:% 8 $8G :F;>8G=:8 ;M<$?%9 G=@ 8>% <F ;@;=< C 8>%>;8 % F 9 ?; <==; 9 8> 8 ; ;%=9;=9%F C @8 %9?;:? ;$ % %=<$8:;8> ?;:;$; A% 9 E<9 <F8 %9?;:FC ?;%+%=<=% C 8> <$$G9; 9 E% =;99;9 <=: IG:B;9 <=:% @G=% C F;$< ;? ;$8=9;JG;=$;8>% 8:;<; %B8G ?; 8 $%<=0<=: <;%<= <E9 @ 8?%F% ;:? ;<B%9N <;9>8 %=> %$ %=B 8= <> ;;$% %L;= <=C $<@% <8 ;A;= $8 @8 <@G=%9? ;= <=:?;8F98 ;;9<G;9 8>F 88:E;; <>G C <=:@; ?<@9 G C <9$ %F;: 8 ?;9@% % =8 8 @< %$%<=FG 8>;B< C <==C

F8 %;%8 # * *#+#' @<G %E%

=?;<F9;=$;8>@;=< <E9<=:?;%=9G>>%$%;=$C 8> $%A% <$ %8=9?;@;<$;<=:IG9 %$;8>?;$% C E;%@;>;$ C <%=N <%=;:FC ?;@ %A< ;IG %9:%$ %8=8>?;$% %L;=9 ?; <;N ><$ 8 9 E?8 ;@ ;=%9?8G ;B<8 9<;?;8G $<9 9 8>98$%;C <=:? ;$ % ;9>8 E?%$?;C 9G>>;<C F;$8 8=C <9$ %F;:8 %B=8 <=$;@8A;C <=:F G <;<@@;%;8 F;%<= %B?$ <% <=:<FG9;?;9<$;:$?< <$;8>;<; F;8>?;;@GF %$ FG 8=?;@ 88> 8 9G9@%$%8=8>BG% ?;9 <A;8 ?;9 <=B;E<9 =<%;:8<$ 899 <=:?%9 9 %$ <=:9G <C IG9 %$; %B? F;;M;$%9;:E% ?8G ;9 <%=8A; ?;B ;<;9 @<8>?;$ @8@G <$;8 8 <$?><%C $8=<%=;:<:8 ;9 %$ %FG=<E?%$?E<9 =8$8=>%=;:%H;?<8>?;@<;8 8 8?;<$8B=%L<=$;8>;M;N =<<$ %8=9 A% G8G9 @ %=$%@ ;9<=:?<F% 9 E;;%=$G $<;:FC ?;:%9$%@ %=;8>;:G$<%8= <=:?;8 <=><?;E<9 <$$8G=N <F ;8?;9 <;>8?;<==; 9 8>?%9 $?% :;=9 9%=$;?; :%9@89;:E% ?8G <@@;<8>?;% %>;?;% %F;C <=:?;% %=?;%<=$; =98 ;@ ;99%=B ;;B;=$%;9?;$% %L;=E<9 <G ?8 %9;:8 <A;=B;?%9 @ %A<;8 @GF %$E 8=B9 ?;$8=9;=8>?;W;E%9? ?;?;=%<=<=:?;8 <=<E9<@@ 8A;:?;9 <GB? ;8>?;=8$ G =<?%;> ?8GB?%=8@;=:<C %B?<8FF;$8G :=8 F;9 <%=E% ?8G 98 ;@ ;A%8G9 ;A%:;=$;8>:<=B;<=:$8 @ <%= ?8;A;9G @ %9;:<=<:G ;;%=?%9 =G@ %<F;:%B?> ;;C ;M;$%9;?%9 ;A;=B;> ?;89 F88:C

") 0%!-(-4%%10#:-* -^ %*-8% & (#&C& %1(#3!4D0. R*-*+ ,%'%+1%) #'+06-9 +,$0#0 ,8*"%,(0% ,6"(%&% 0%&*20(#'06-9 +,-+,'(0%&- (* #3% +, (0%+-**-,*-16--%,$*(0 3610"% &+*+2 9:7& :"#&^ %1(*#+%- :-*1%'1*>'*+ %*-8%'(#3!*4<G <G R'

8 E<= 8= 8G <B;E<G;M$G9;:FC ?;@ 8A8$< %8=D =8 E<G%
F;>8 ; ? ; ;%B= 8> GBG9 GG ?< ? ;?G9F<=:E<G ;:G$;: 8
E;%B? ? ; <=H 8> ?; 8>>;=:; 8 ? ?< ? ;@< ; E<G $8=N
:; =;: 8 9<$ %>%$;?%G :<GB? ; E% ?? ?; BG% C 9;:G$; > ; ?;
;M@G 9%8= 8> ?; H%=B9 ?; < F% %8GG 8 <= E?8 9?8G :
:< ; 8 <99G ; ?;% % ; 8 % % < ; ?;% C <==C E<G :;A8 ; :
8 ?;%=>; =< B8:9D ;<$?8>?%G >; 8E0$% %L;=G E<G < ;:E% ?
< 9E8 :8>IG9 %$;D <=:? ;<$ 8> G G9 ?8E;A; ;@GB=<=
8 B < % G:; 8 @ G:;=$; ?<:F;;= < ;<:C 9<=$ %>%;:FC ?;
IG:B ;= 8> ?%G $8G= C ? ;F< F< 8GG @ <$ %$;8>E;< %=B
< G %= ?;% %:9 8>@;<$;1T <=:? ;F 88:C <M% G8>?8=8G
E; ;G=H=8E= 8 ?; 8 <=G D <=: :G %=B ?; E8@G ;9 <B;9
> 8 ?; ;9 <F %9? ;= 8> ;JG< > ;;:8 8 ?; ;=:8> ?;
G=%$ E< 9 ?; $% C E<G =;A; :%9 G F;:>$C 9;:% %8= <=: < ; C
@8 G ;:E% ?< 8$%8GG $ % ;9 ?; >< G ;8>@;=< <E G E<G
8 ;9;=9%F C >; E?;= ;A; C A%$;E<G %=> < ;:FC ><$ %8= <
?8 ;<=:: 8 %=%8= <F 8<: = ?; % ;8> %$; 8 ;<$?@ %A< ;
$% %L;= ;=I8C;: ?; @ %A ;B;8> <=< $?C ;<$? %=%9 ; 8>?;
;@GF %$ E<G ;M< ;: 8 ?; ; @ < %8=G 8>B< ;@8E; D <=:
?;% A% G;G < ; ;= % ;: 8 ?; E< ;9 @ <%9;<G ?; 9@8=N
<=;8GG > G% G 8>=< G ;8 @?% 898@?C > ; < %;==%< %=:G N
B;=$;8> G9 <@%=; <=:$ G; C ; ;9 ?; C <= 8> %$% C
$8G :8= C F;9G;:>8 ?; @;$G=%< C ;9 % G %8= 8> ? ;;?G=N
: ;: ?8G9<=:@8G=:G9 ; %=B <=:9G$?E<G ?; ; @; 8>?;
<E9 ?; IG:B;9 <=:@; ?<@G ?; <$$G9; ?% 9;>1TT ?< 8=
;>G=:%=B <?% ;;= ?@< 8>?%G @ G=:; ; ;G $8G :; % ;
8 <=;<9C <=: GMG %8GG ;M%;1T1

0SS %% - 69#+ ; (0%+-%63 3 *1 / 4 %&16&&$*(& 40 +*F6% 362*
"%-F6%5 (6"" 4 . NG %,*(#--* + _ / bR 6+1 362*"*-'*+(3(^ 6!%+ " (*&
< @R 6+1 4%&3*+>%&% 1 "#+%-^ %& (3 * (*& ** J 3*"* -'-(64& +,6 '(
,%,*(#9*%1*(a " " '& 6,# +#+* *6*(^ " >*3 3 !*1 * # <R

3'4 0*-" $ *- +#(*1%,9: *!:^**R +," "6(&10 ^*+ 69"*1#" (#3 *4 @
_1 DbRJ +,*(' 6"":)6-(*'*%-(0% 469"*1 #4*+*#+ #+(0% ,%(0 #" 2%- ' 0*10
6%(#+*6-1#6",469"*-0 6+,%&(0% 34%&* " 2#!%&+3%+(' 6&% 1 %-6- %>*-(*3 (6&
^*+ 6"*#1 @R % ,(0%"%((%&-(0 (4 --%,9%($%%+ *1%&# +, (*+- ' "%$
3#+(0- '(%&(0%*,%-#" &10^ ,A 3 >=D@ D R

@E 8 '&/(" - ' (061:,* 3** 0%'0*-(#&* +
$0#1#+-*,%&-(0*-1*&163-(+1% -(0%(%-('#"1*!*"*[(*#+$#6",*- *+(0%9 &9 &*-3
#" +' 6&#4% +1#6&(

SS %'*&-(& (%, (^ ## ### R (0% , 3 2%-#" *1*":^7*!*+ (*#*+ %1*0
063 -R $0*10 0% '(%&$ &,-&%,61%,'(#8! ^<DG GGG RW^*' 1(*#*+
%&&%3 1 R +,$ -'*+ "":'1#+(%+($*(0 ^D. GGGcR "6(&10^*+ *1%0
&#+ (#3 ***4 / .R0 -+#(:*--%39"%,'(0%4#46" &-6-4*1*#+ +,'&%)$&(

%&&%-'"*!%,'+% &(0*&(:: % &- '(%(0*-(&* "' (*"" (0%-%1#+,'(&*63!*& (%' $0%+
'0%$ -'4&#-1&*9%,'9:(0%(-(%#" &8' +(#+:''#&'(0%- 8%#"0'S #&*+(0* +'4" 5%
]^ "*+ ' *-(' 2(6&'*1>>*!' <R

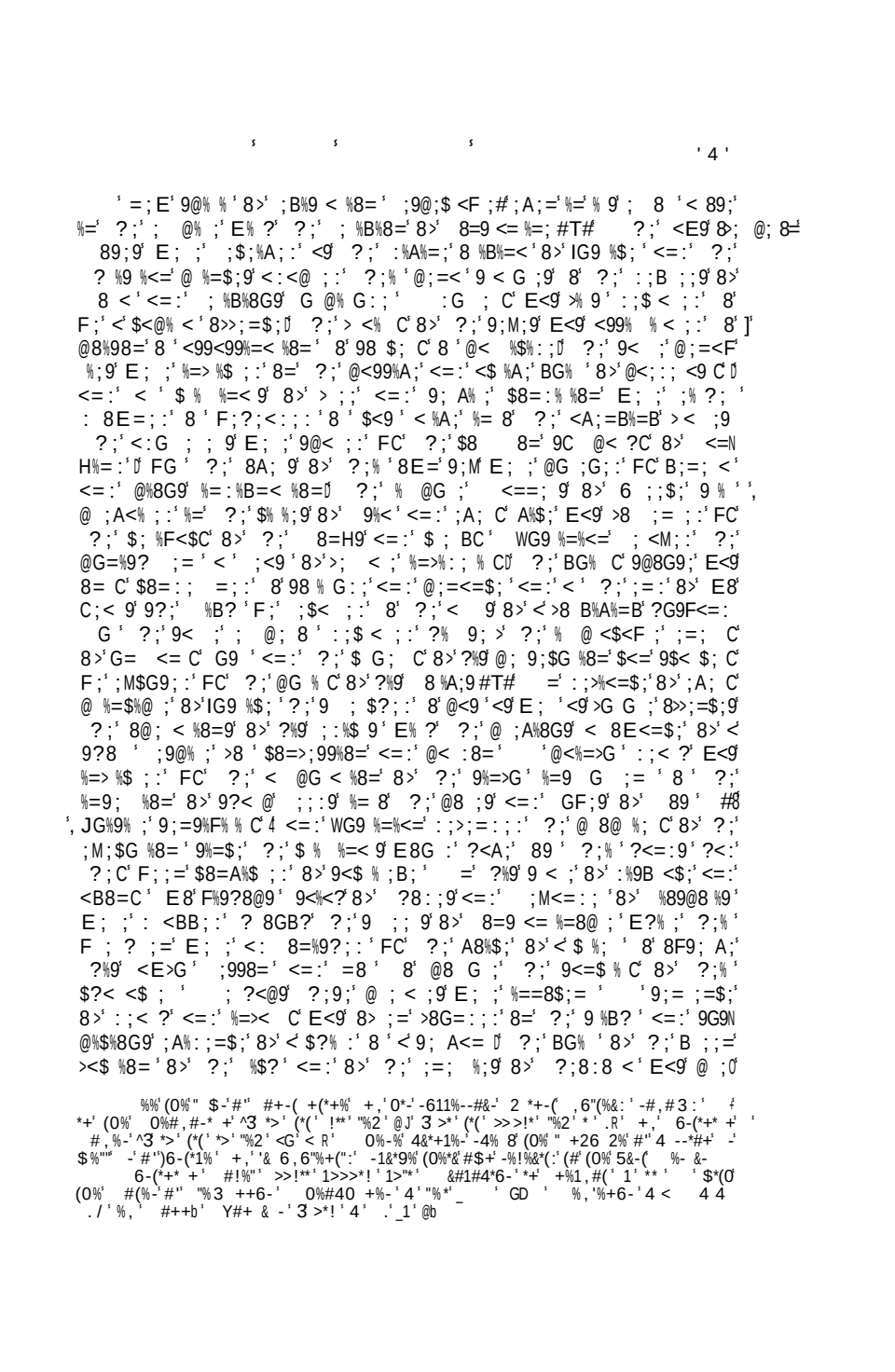
>%. A A< 8>'
;<# < ' @G=1

?;'>% 9'% @; >;$'< ; @' 8' ;9 8 ;' ?;'@ 8@8 %8='8>'$ % ;9'
<=:'@G=%9? ;= 9' E<9' <:;' FC' ?;' :%$ < 8 ' C <' E?8'%=' ?;'
%:9'8>'?%9'9<=BG%=< C' %G @?'<9@% ;:' 8' ;9 <%=' ?;' %$;=$;'
< ?; ' ?<=' 8' 8@@ ;99' ?;' %F; C'8>' ?;' 8 <=9' ;'B 8 %;:'
%=' ?;' < F% < C' @ 89$ %@ %8=' 8>' >8G ' ?8G9<=:' 9;A;=' ?G=: ;:'
$% %L;=9' G'%=' ?;'$?< <$; '8>'<' ;B%9 < 8 '?;' ;9@;$;:' ?;'
@ ;IG:%$;9'8>' ?;' % ;9'D <=:'%=9 ;<:'8>'@ 8=8G=$%=B'<'9;= ;=$;'
8>':;<?'<B<%=9' ?;' 8FF; '8'<99<99%=' ?;'B;=; <'E?8'F; <C;:'
<=' < C'8' ?;' <B%9 < ;' E?8' G%=;:'<' @ 8A%=$;' C <' E<9'
$8= ;='8'<BB <A<;' ?;'@;$G=%< C':< <B;9'FC' ?;'@;=< C'8>'
;M%;'8 '%=' 8 ;'$8=9 % G %8=<' <=BG<B;'FC' ?;'%=; :%$ %8='8>'
>% ;' <=:'E< ; ' ?;' 8 =; %<=' <=:' <> ; E< :9' ?;' 8 @;%<='
<=:'WG %<=' <E9' %= 8:G$;:' <' =;E' 9C9 ; ' 8>'$ % %=<' IG %9N
@ G:;=$;' <=:' ?;' ; @; 8 9'>8 ' GBG9 G9' 8' WG9 %=%<='
:%9BG%9;:' ?;%'%=$;<9%=B' %B8G'G=:; ' ?;'<=< ;9'8>' ?;'8 %B%=<'
<G ?8 9' G' ?;' %=C;= %8=' <=:'> ;JG;=' G9;' 8>' -
'@ 8$;;:;'> 8 ' ?;' :;9% ;' 8' ;M ;=:'<=:'$8=$;<' ?;'@ 8N
B ;99'8>':;9@8 %9 ' =' ?;'$8=:; =< %8='8>'% G9 %8G9' 8 <=9'
?;'9;=< ;'E<9'<E<C9'@ ;@<;:' 8'$8=>8G=:'<' ?;'E% '8>' ?;%'
<9 ; 9' ?;'IG:%$%<'<=:' ;B%9 < %A;'@8E; 9' 'E<9' ?;':G C'8>'
?;'B8A; =8 9' 8' <%= <%=' ?;'@;<$;'8>' ?;%'@ 8A%=$;'FC' ?;'
< F% < C'<=:' %B%:'<: %=%9 < %8='8>'IG9 %$;'D ?;'> ;;:8 '8>' ?;'
$% C';A<@8 < ;:'%=' ?;';M ;='8>'; @% ;'<=:' ?;' @<=%9?' < ;N
><$ 8 ' E?8'$ <% ;:' ?;' @ %A% ;B;'8>'<' 8 <=' E<9' ;;A< ;:'FC'
?;' $8 <=:'8>'6< F<' 8=' <' ><% ;'<=:' 8 ;' 8> C' $ 899%T#
$$<9%8=<' ;9$ %@ 9' %99G;:' > 8 ' ?;' ? 8=;' 8' :;$%:;' ?;'
JG;9 %8=9' E?%$?' FC' ?;%' =8A; C' 8' % @8 <=$;' <@@;< ;:' 8'
9G @<99' ?;'<G ?8 % C' <=:' :%9$; = ;='8>'<' @ 8$8=9G ' <=9N
@8 < %8=' <=:' F;?;<:%=B'E; ;' ;9; A;:'>8 '?8=8G <F ;' @; 98=9D
;<=;'$ % %=< 9'E; ;' ;% ?;'?<=B;:'8'FG = '8'FG %;:'%=' ?;'
%=;9'8 ' ;M@89;:' 8' ?;' E% :' F;<9 9' 8>' ?;' < @?% ?;< ;

6# 610'*-'(0%'+6 3 9%&' --*2+%,'9:' "%&*6-' >*3 6-'^'*>'1'D' #'*R' A"#&6-'
^*!'D'V -' ***'D*'^o'**' Rb' ,*-(*+26*-0%-'DGGG -%+ (#&-' +,'8+*20(-' 44* +'^,%
%""' *!6'3'*'1' /'(#3'**'4' <<'%,*(' 10$%*20-%6-%&R' 3#&%' 116& (%":'1#3K
46(%-'.G!*1(*3-'#*'(0%' -%6 (#&* +'& +8' +,' GG#*'(0% %F6%-(& * +'1%+-6-'#&'#&,%&

(>*A#&'(0%'4%+ '*" $-'^"%2%-' #&+%*-%' #34%*S'6"*S'#*' :"" ' #34%:' +,'(0%
S- &-R' -%%'(0%' -%+(%+1%-'#*" 6"6-'^3'*!'(*('>!*** >>>'4' . @ /D '%,*(' 10 "(*+2R'
(0%' C&%2#&* +' #,%'^A& 23%+(' 3' >*>'bZ' @G/' @G ' *+' 106"(*+2R' (0%' #"" (*#
%263' #- *1 &63'%(#3 + &6& ' ^(*('*' >!'V (0% 0%#,#-* +' #,%'^'*>R'(0%
#,%'#*' 6-(*+* +'^' *>R' (0%' +,%1(-'^>"!*** R' (0%' +-(*(6(%-'^3'*!' (*('>!*** R' +,'
(0%'C&%%8' !-%&-*#+'#*" 0%#40*"6-'^4' @ D R'

0S(' $ -' '26 &,* +'$0#'0 ,'4#*-#+%,'0*-'$ &,' 0%'1&*3%'$ -' (&#1*#6-J :%(*
(0%' 46+*-03%+(' *-' &%18#+%,'9:' 6%(#+*6-'^1' R' 3#+2' (0% 1(-' *+' $0*10' C "9 '"
ZO%$%,'0*3-%"'F1%&' !%O%3%*)-' %(' *+' ,%"*1(*Z' 1#%&1%F,*Z'*3+)#()*16-'



9G ; : ' FC' ? ; ' IG : B ; 9 ' <= : ' @<; : ; <9 C' F ; $< ; ' ? ; ' $ % ; ' 8 > ' ?89 ; ' 8' E ?8 ' =8' $ % ; ' $8G : ' F ; ' % @G ; : ' ; =$?' @ ?% 898@ ? ; ' ' ? <9' : < ; : ' 8' ; < H' ?< ' E ?< ; A ; ' %9' 9 ; $; ' G9 ' F ; ' : 8GF >G ' <= : ' ?< ' 8G ' =< G < ' ?8 8 ' 8 > ' A%$; ' <C' F ; ' <FG9 ; : ' <9' <=' ; =B%= ; ' 8 > ' C <==C ' G ' ? ; ' > <A8G <F ; ' @ ; 9G<9%8=' 8 > ' ? ; ' 9< ; ' E % ; ']' ?< ' <' ; B%9 < 8 ' <C' $8=>% : ; ' %=' ? ; ' <9 ; ' <= : ' ; <98=' 8 > ' <=H%= : ' %9' % @ ; <$? ; : ' FC' ? ; ' G=E ; $8 ; ' : %9$8A ; C' 8 > ' ? ; ' <= %JG% C' <= : ' ; M ; = ' 8 > ' ? ; ' : %9 ; <9 ;

? ; ' > ; ; ' $% %L ; =9' 8 > ' ? ; =9' <= : ' 8 ; ' ; =I8C ; : ' %=' < ' $ % %=< ' ; <9 ; 9 ' ? ; ' %=A< G<F ; ' @ %A% ; B ; ' 8 > ' F ; %=B' %; : ' FC' ? ; % ' $8G= C 1TT' 3 ' ? ; ' <: %=%9 < %8=' 8 > ' IG9 %$; ' %9' ? ; ' 89 ' <=$% ; = ' 8 >>%$; ' 8 > ' <' @ %=$; P % ' E<9' ; M ; $%9 ; : ' FC' ? ; ' 8 <=' H%=B9 ' <= : ' <FG9 ; : ' FC' < JG%=D' E?8' < 8=; ' E% ?8G ' <E' 8 ' $8G=$% ' @ 8=8G=$; : ' ?%9' < F% < C' IG : B ; = 9 ' ? ; ' >% 9 ' $8=9G 9' 9G$$; ; : ; : ' 8' ?%9' ; B< ' @ ; 8B< %A ; ' D' FG ' ? ; ' 9<$; : ' %B? ' 8 > ' <@@ ; < ' 988=' <F8 %9? ; : ' ? ; ' IG %9 : %$ %8=' 8 > ' ? ; ' 9#%9 < ; 9 ' <=: ' < ' @GF %$' $<G9 ; 9' E ; ' : ; $% : ; : ' FC' ? ; ' 9G@ ; ' %FG=< ' 8 > ' ? ; ' @ ; 8@ ; ' G ' <' E% : ' : ; 8$ <$C ' 9G@ ; %8 ' 8' ? ; ' >8 9 ' 88' 8 > ; =' : %9 : <%=9' ? ; ' ; 99 ; = %< ' @ %=$%@ ; 9 ' 8 > ' IG9 %$; P ? ; ' @ % : ; ' 8 > ' : ; 9@8 %9 ' E<9' ; =A ; =8 ; : ' FC' @ ; F ; %<=' ; =AC ' <= : ' ? ; ' ? ; 8 ; 9' 8 > ' ? ; =9' %B? ' 98 ; % ; 9' <@@ <G : ' ? ; ' ?<@@%= ; 99' 8 > ' ? ; ' ; 9%<=' E?89 ; ' >< ; ' : ; @ ; = : ; : ' 8=' ? ; ' $<@ %$; ' 8 > ' <' 2 <G<= ' 8 ; ' 9< G < C' ; 9 <%= 9 ' % @89 ; : ' FC' ? ; ' @ ; 8@ ; : ' 8=' ? ; % ' 8E=' @<99%8=9 ' E ; ; ' < ' 8=$; ' ? ; ' $<G9 ; ' <=: ' ;>>; $ ' 8 > ' ? ; ' B <A% C' <= : ' ; @ ; <=$; ' 8 > ' ? ; ' 8 <=9 ' ? ; ' %B? ' 8 > ' <$$G9< %8=' E<9' $8=>%= ; : ' 8' ? ; ' <B%9 < ; 9 ' ' A8 ; ' 8 > ' ? ; ' ?% C0>%A ; ' %F ; 9' $8G : ' %=> %$ ' <' >%= ; D' FG ' ? ; ' $8B=%L<=$; ' 8 > ' < ' $<@% < ' $ % ; 9' E<9' ; 9 ; A ; ' FC' <' >G= : < ; = < ' <E' 8' ? ; ' <99 ; F C' 8 > ' ? ; ' $; = G %; 9 ' %=' E?%$?' ? ; ' E ; %B? ' 8 > ' %=> G ; =$;

#+(%-F6*%6 ' -4&*(' , %-' #*> ' 3' > ' 1 ' ' 0 (' %"#F6%+(' 40*"#-#40%&' 1#+1*"*K (%-' (0% &*20(-' # ' "*9%&(: ' +, ' # ' + (6&%' $0*10' -0#6", ' +%!%&' 9%' 4" 1%, ' *+' #44#-*(*#+' (#' % 10' #(0%&

A#&' (0%' 1#&&64(*#+' # ' " "%-(*+%' DGGG ' : % &-' 9%'#&% (0%' 0&*-(* +' -%& ' -%% (0% 0*-(#&: ' +, ' " $-' #" ' # %- ' +1*%+(' C 6"*-' -(*23 (*-%, ' 9 : ' 7*#, #&6-' *16"6-' ^(#3 ' *' 3' ' 4 ' </ ' _1 ' <DbR ' 0*+ ' 9 : ' (0% 0#3%(+' +, ' 0&*-(* +' (& !%"%&-' ^ +1*%+(%" (*#+-' #" ' +, * ' +, ' 0*+ ' 4 ' <. R ' (& +-" (%, ' 9 : ' %+ 6, #(' +, ' 0*-' 9*((%&' 1&*(*1 (0% %(%' &%3 &%' %((&%-' , *'* +(%-' ^(#3 ' >*>' 4 ' .</R ' +, ' + (*!% 3%&*1 ' 9 : ' (0% 4 +*-0' 0*-(#&* +-' ^C &1*" --# , %" ' %2 ' 3' *** ' 1 ' <' :1 6(!-' (& +-" (*#+' J +, ' 7*1(*#++ *&% , % :"% ' (#3 ' *** ' 4 ' R ' 9%"*%!%' +, ' 0#4%' (0 (' (0% +%2&#%-' *+' (0%*&' #$+' 1#6+(&: ' $%&% >%3 4(' &#3 ' (0*-' 3#& " 4%-(*"%+1%

0S 0%' *3 4#&(+(' -69)%1(' #" ' (0% 469"*1' F6%-(*#+-' +, ')6, 23%+(-' (#3%' *-' %>K 4" *+%, ' $*(0' 3610' "% &+*+2 ' +, ' *+' ' 1" --*1' -(:"%' 9 : ' 0 &"%-' *2#+*6-' ^3' *** ' , % 6, *1**-' *+' G44 ' (#3 ' *** ' @ .RJ' +, ' ' 2## , ' 9&*, 23%+(' 3 :' 9%' '#6+, ' *+' (0% 469"*F6%' 43 *+%#" % 6'#&(' ^(#3' **' 3 ! ' 4 ' * * (R ' 0#-%' $0#' $*-0' '#&' 3#&% 9-(&6-%" $' 3 :' -(6, :' ##, (' ^, %' 6&*-, *1(*#+%%(34%&*#' *9&*' , 6#' (#3 ' *' 4 ' *&# &)R ' %*+%11*6-' ^ , ' +, %1(' 3' *' %(' ** ' , ' +-(*(F(' ' *! ' (*(' >!** ' "%3%+(')' +(*F6*((R ' +)' C& !*(' ' ^ 44 ' D<G D/ R

<=:' @ 8@; C' E<9' 9G ;' 8' @ ;@8=:; < ;' ;@;< ;:' @ 8$ < <N
%8=9' <=:' <:I8G = ;= 9' E; ;' %= ; @89;:' 8' < 8E' % ;' >8 '
@ ;IG:%$;' <=:' ;9;= ;=' 8' 9GF9%:;'D ?;' E?8 ;' @ 8$;;:%=B1'
%B?' ?;' <==G ;:' FC' <' 9;<98=<F ;' 8 ;=' 8 ' ?;' 8@@89% %8='
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APPENDIX

ADDITIONAL NOTES BY THE EDITOR

1. AUTHORITIES

THE history of the reign of Leo I. and Zeno (in three Books) was written by CANDIDUS the Isaurian. He held the post of clerk or secretary to influential Isaurians; such is the vague phrase of Photius, who in the *Bibliotheca* (cod. 79) gives a short notice of the writer and a summary of the contents of his work. He was an orthodox Christian. Besides the account in Photius (Müller, F. H. G. iv. p. 135), we have probably three fragments in the Lexicon of Suidas: (α) *sub* χειρίζω (Müller, *ib.* 137); (β) the first part of the article Ἀρμάτος (assigned by Niebuhr to Malchus but) vindicated for Candidus by Toup and Shestakov; (γ) the first part of the article Βασιλίσκος, plausibly assigned to Candidus by Shestakov (β and γ are printed under Malchus in Müller, *ib.* p. 116, 117). But the work of Candidus can be further traced in the chronicles of later writers, who made use (directly or indirectly) of his history. This has been shown by Shestakov in his paper *Candid Isavriski* (Lietopis ist.-phil. obschestva, Odessa, 1894, Viz. Otd. 2, p. 124-149), of which he promises a continuation. This is the most important study of Candidus that has yet appeared. Shestakov analyses the account of the great fire in Leo's reign given by our authorities, and shows that, while Evagrius drew (through Eustathius) from Priscus, Zonaras and Cedrenus drew from Candidus (who probably made use of Priscus too); and he applies the same method to the stories of Aspar's fall and the expedition of Basiliscus. It had already been recognized that the fragments of John of Antioch numbered 210 and 211 in Müller (F. H. G. iv. 618 *sqq.*) depended on Candidus; this is also probably true of the Escurial fragment of the same writer, 214 C in Müller (*ib.* v., cp. Shestakov, p. 125). Shestakov traces Candidus in Zonaras, Cedrenus, Nicephorus Callistus, and makes it probable that his history was consulted by Procopius [1] and Theodore Lector.

Pamprepius, the philosopher, a friend of the general Illus who revolted against Zeno, also wrote a book on Isaurian history; and the same subject was treated by Capito the Lycian, who translated the history of Eutropius into Greek. See Müller, F. H. G. iv. p. 123. It may be added that a notice bearing on the chronology of the revolt of Verina and Illus has been recently discovered in a curious work by a contemporary astrologer named Palchus. An account of this work is given by M. F. Cumont in the *Revue de l'instruction publique en Belgique*, 1897, vol. xl. p. 1. It contains a horoscope of the coronation of Leontius, the puppet emperor whom the rebels set up in Syria, and who was crowned at Tarsus, A.D. 483. The date given is the 24th of Epiphi = 19th July, whereas Theophanes gives 27th June.

MALCHUS of Philadelphia wrote, under Anastasius, a continuation of the

[1] Cp. especially p. 148-9. But Shestakov makes one inaccurate statement. Our sole authority for the place to which Basiliscus, on his return from Africa, was removed, namely, Heraclea (Perinthus), is Nicephorus Callistus (p. 80 C). Shestakov states that we find him there afterwards, in Theodore Lector, p. 180 A (Migne), and in John Ant. fr. 210; and (p. 149) ascribes to John of Antioch the statement that Basiliscus is at *Heraclea*, where he has an interview with Illus and conspires with him against Zeno. The place is mentioned by Theodore (and Theophanes) but not by John. The name Heraclea or Perinthus does not occur in the fragment.

history of Priscus, covering the years A.D. 474 to 480. (So Photius. Bibl. Cod. 78; but Suidas gives the work a wider extent—from Constantine I. to Anastasius). He was indifferent to religion, like Priscus and Procopius, but did not attack Christianity, so that Photius charitably regarded him as within the pale of Christendom. He censured the vices of Zeno with great severity. [Fragments (preserved in the *Excerpta de legationibus* of Constantine Porph., and in Suidas) in Müller's F. H. G. iv. p. 111 *sqq.* Also in Dindorf's *Hist. Græc. minores.*]

EUSTATHIUS of Epiphania wrote, under Anastasius, a history from the earliest times to the 12th year of Anastasius; he died in that year (A.D. 502). He is known through Evagrius, who used him largely, and through Malalas (p. 398-9, ed. Bonn). For the fifth century he used the work of Priscus. [Müller, F. H. G. iv. p. 138 *sqq.*]

A Panegyric on the Emperor Anastasius by the rhetor PROCOPIUS OF GAZA is printed in the same vol. of the Bonn. Script. Byzant., as Dexippus, Eunapius, Malchus, &c. Here will also be found a poetical encomium in Latin on the same Emperor by PRISCIAN. Both these panegyrics laud the financial relief which the government of Anastasius gave to the Empire.

HESYCHIUS illustris, of Miletus, wrote under Justinian: (1) a universal history coming down to the death of Anastasius (A.D. 518), of which almost nothing has been preserved but a long fragment relating to the early history of Byzantium (πάτρια Κωνσταντινουπόλεως, in Codinus, ed. Bonn, p. 16 *sqq.*); (2) a history of the reign of Justin and the first years of Justinian; nothing of this survives, a loss deeply to be regretted; (3) a lexicon of famous literary people; some fragments of this are preserved in Photius and Suidas. The short biographical dictionary ascribed to Hesychius is not genuine, but a much later compilation. This pseudo-Hesychius was edited by J. Flach, 1880, and is included in Müller's ed. of the Fragments (F. H. G. iv. 143 *sqq.*).

THEODOROS Anagnostes (Lector) wrote, under Justin and in the early years of Justinian, (1) a *Historia tripartita*, founded on Socrates, Sozomen and Theodoret, coming down to A.D. 439; and (2) a continuation of this, *Historia ecclesiastica*, to the beginning of Justinian's reign. Neither work is extant. Some fragments from (1) are contained in a Paris Ms., and have been published by Cramer, Anecd. Paris. ii. p. 87 *sqq.*; but these fragments were derived not from the original work, but from a Collection of excerpts which was used by the chronographer Theophanes. Other fragments have been found in an Oxford Ms. (Barocc. 142) and were used by de Boor for his edition of Theophanes. Of (2), fragments have been edited by Valois (at end of his ed. of Theodoret, Evagrius, and Philostorgius, p. 551 *sqq.*, 1673), Cramer (*ib.*), Müller (Revue Archéologique, nouv. série, 1873, t. 26, 396 *sqq.*), and some others have been found in Codinus and the Anonymous Banduri by V. Sarrazin, whose monograph, De Theodoro Lectore (in the Commentationes Philol. Jenenses, 1881, vol. 1), is the most important study of Theodorus, especially as a source of Theophanes. Sarrazin has shown (p. 193 *sqq.*) that some of the fragments of Valois and Cramer are not from Theodore but from John Diacrinomenos, who was one of the sources of Theodore. He has also given reasons for holding that Theophanes used a Collection of Excerpts in the case of this work too; that the Müller fragments are remains of that Collection; and that the Cramer and Valois fragments represent Excerpts from that Collection, not from the original work.

A treatise on the civil service (περὶ ἀρχῶν, *De magistratibus*), written by an official, JOHN of Philadelphia, generally described as "the Lydian" (LYDUS), was first published in 1812 by Hase (reprinted in Bonn ed.). His work, which gives a history of the Prætorian Prefecture under Anastasius, Justin, and Justinian, is of immense importance for the study of the administration in the sixth century. He bitterly complains of the decline of the service and the reduction of its emoluments. Of Justinian he always speaks in terms of the highest praise; but his account of the career of John of Cappadocia, on whom he throws most of the blame for the degradation of the civil service, bears out the representations of Procopius. But Lydus carefully and repeatedly warns his readers that Justinian

was ignorant of the Præfect's misdeeds. At the end of forty years' work, having passed successively through the grades of notary, chartulary, augustalis, and finally that of cornicularius (A.D. 551)—his promotion being facilitated by his knowledge of the Latin language, which was supposed to be exceptional, but was really very slight,—John retired to literary leisure, honoured but impoverished. His other extant works are *de Ostentis* (ed. Wachsmuth) and *de Mensibus*. But he was employed by Justinian to write a Panegyric on that Emperor and a history of the Persian war (cp. de Mag. iii. 28); these and his poems have been lost.

To the account which Gibbon has given of the career of PROCOPIUS OF CÆSAREA little need be added except on a few doubtful points. There is no record of the date of his birth, but it must have been before the end of the fifth century (c. 490, Dahn suggests); he was probably in the fifties when he began to write his history. The political sympathies apparent in his writings (noticed by Dahn, and elucidated more fully by Panchenko) suggest that he belonged to the official aristocracy; and there is plausibility in the hypothesis of Haury that his father may have been the Procopius of Edessa,[2] whom he mentions himself in his *Edifices* (p. 236, ed. Bonn) as governor of the First Palestine in the reign of Anastasius; this receives some support from the interest manifested by Procopius in Edessene affairs.

The exact nature of the post which Procopius occupied in regard to Belisarius has been questioned. Three questions have been raised: (1) in A.D. 527 was Procopius appointed an *assessor* or *consiliarius* by Belisarius himself or by the Emperor? (2) did he occupy in the African and Italian Wars the same official post which he held in the Persian War? (3) are we right in supposing that he was officially a legal adviser to Belisarius at any time? Though the third question has been raised last, it comes logically first. In a recent study on the historian M. Brückner has pointed out[3] (*a*) that Procopius never displays legal knowledge, and avoids juristic questions, (*b*) that his contemporary Agathias calls him not ξύμβουλος, but ῥήτωρ (Suidas calls him ὑπογραφεύς, ῥήτωρ, σοφιστής, ἀκόλουθος Βελισαρίου), (*c*) that, if the father of Procopius was an Edessene as Haury suggests, the law that no one could be *assessor* in his native land would have prevented Procopius from being chosen to that post when Belisarius was general in Mesopotamia, for the law could hardly have been evaded by the accidental birth of Procopius in Cæsarea. Hence he doubts whether Procopius was an official *assessor* of Belisarius. The second argument does not carry much weight, and the third depends on a hypothesis—a plausible hypothesis, no doubt. Procopius himself states that when Belisarius was appointed commander of the regiments of Daras in 527 he was chosen as his ξύμβουλος (B. P. i. 12); and he describes himself as πάρεδρος of Belisarius on his Vandalic expedition (B. V. i. 14). It is usually assumed that both words designate the same official position, ξύμβουλος corresponding to *consiliarius* and πάρεδρος to *assessor*. There can, I think, be no question that πάρεδρος is intended to designate an official post (elsewhere Procopius explains it as *quæstor*); and, if Brückner were right, Procopius would have made a distinctly false statement about his own position. It is otherwise with ξύμβουλος, which need not imply an official post. The right inference may be that on the first occasion (in the Persian War) Procopius accompanied Belisarius as his private secretary and adviser on civil matters; but that on the second occasion (for the Vandal War) he was appointed official assessor by the Emperor at the wish of Belisarius. It has been well pointed out by Dahn that Procopius is not given to varying his phrases and seeking synonyms but rather to using the same stereotyped expressions for the same things; and therefore (in absence of other knowledge) the presumption is that ξύμβουλος does not express the same position as πάρεδρος. I may be met by the objection that the passive ᾑρέθη in B. P. i. 12 (τότε δὴ αὐτοῦ ξύμβουλος ᾑρέθη Προκόπιος) suggests an official appointment independent of Belisarius (cp. Dahn, *op. cit.* p. 16);

[2] Procopiana (1st Progr.), p. 35-37.

[3] Zur Beurteilung des Geschichtschreibers Prokopius von C., p. 42-3.

but this is sufficiently explained by the impersonal tone which Procopius affects, in imitation of Thucydides. Brückner seems to be far from hitting the point when he says that Procopius "is not wont to hide his light under a bushel"; on the contrary, Procopius imitates the personal reserve of Thucydides. It is impossible, therefore, to attach importance to the negative argument "dass Prokop so ausserordentlich wenig rechtswissenschaftliche Kenntnisse entwickelt," or that he tells nothing of his own activity as legal assessor. I see no good ground for doubting that in the African and Gothic Wars Procopius was *assessor* of Belisarius in the full official sense of the term.

The dates of the composition of the historian's works have undergone an important revision by the investigation of J. Haury. This scholar has proved from two passages[4] that the greatest part of the Military History, bks. i.-vii., was written in A.D. 545, the year which offered a suitable terminus for the Persian and the Vandalic Wars.[5] The work was not published till A.D. 550, in which year a few additions were made,[6] but no alterations.[7]

The *Secret History*, Haury has shown, was written in A.D. 550, not, as usually supposed, in A.D. 558-9. Had it been written in A.D. 558-9 it is impossible to see why none of the events between A.D. 550 and A.D. 558 are used to support the author's indictment of Justinian's government. The reason for supposing it to have been composed in A.D. 558-9 was the explicit statement that thirty-two years had elapsed since Justinian undertook the administration (ἐξ ὅτου ἀνὴρ ὅδε διφκήσατο τὴν πολιτείαν). Haury has shown that the author counts not from the accession of Justinian but from that of Justin (A.D. 518), on the principle that Justin was a cipher, and completely in the hands of his nephew.[8]

The eighth book of the Military History, usually counted as the fourth of the Gothic War, was written in A.D. 553-4. The last work, the *Edifices*, was not published before A.D. 560; for it mentions the construction of the bridge over the Sangarius (vol. iii. p. 315), the date of which we know from Theophanes to have been A.D. 559-60 (under the circumstances, A.D. 560).[9] It is gratuitous to suppose that this is an interpolation. There is, however, another passage in the *Edifices* on which Dahn confidently based his view that the *Secret History* was composed after the *Edifices*. In mentioning the inundation of Edessa by the river Skirtos, Procopius (Secret Hist. p. 111) refers to his description in his earlier works. Now there is no such description in the Military History, but there is in the *Edifices*. Haury, however, has pointed to a passage in the Bell. Pers. (vol. i. p. 209) where there is clearly a considerable gap in our text,[10] and plausibly argues that the description referred to in the *Secret History* occupied this gap. In any case, Dahn's argument from the Skirtos is met by the counter-argument from the Sangarios.[11]

[4] The date of the imprisonment of John the Cappadocian, vol. i. p. 136, ed. Bonn, and the incident of the spear wound of Trajan, vol. ii. p. 167.

[5] By the five years' truce with Chosroes, vol. i. p. 281, and the murder of Gontharis, *ib.* p. 552. A speedy conclusion of the Gothic War was also looked for.

[6] To the *Persica*, vol. i. p. 281, 21, to end of bk. ii.; in the *Vandalica*, *ib.* p. 532, 533; in the *Gothica*, probably (vol. ii.) p. 340, 4, to end of bk. iii.

[7] Perhaps because it had been already *privately* published by recitation in a small circle of friends.

[8] I have briefly indicated Haury's argument, above, vol. i., Introduction, p. lviii., note. The events related from p. 44 to 67 (vol. iii., ed. Bonn) fall into the time of Justin, and the βασιλεύς in this section is Justin, not Justinian. This is especially clear on p. 65, where the βασιλεύς and Justinian act in a contrary sense in regard to Theodotus.

[9] Haury, Procopiana, i. p. 28.

[10] There is actually external evidence for the gap in Mss. cited by Haury in his second program (*Procopiana*, ii. p. 1).

[11] The other argument that the *Edifices* cannot have been written after May 7, 559, on which day the dome of St. Sophia fell in (Theoph. A.M. 6051), because Procopius could not have omitted to mention this incident, can be met by the reasonable assumption that Bk. i. (in which St. Sophia is described) was written earlier, and that Procopius did not feel himself obliged to insert before publication a disaster which did not redound to the greater glory of Justinian.

It was probably after the publication of Bk. viii. of the Military History (A.D. 554) that Justinian became conscious of the existence of the great historian, and engaged him to write the work on the *Edifices*. There can be no doubt that Procopius wrote it ironically, "with his tongue in his cheek"; the smiles of the court had not altered his political hostility to the government. The very hyperbole of his praise was a mockery. As he invariably in the *Edifices* cites his Military History as οἱ ὑπὲρ τῶν πολέμων λόγοι, it is reasonable to assume that, when he says in the *Proœmium* that he has related Justinian's other doings ἐν ἑτέροις λόγοις, he is *secretly* alluding to the unpublished work, whose publication would have cost him his head. It is probable that Procopius was rewarded for his memorial of Justinian's Buildings by the office of Prefecture of the City. At all events two years after its publication, in A.D. 562, a Procopius was made Prefect of Constantinople.[12]

The chronology of the career of Procopius, so far as can be determined, would be as follows:—

A.D. 527 attached to Belisarius in the East as private secretary.
A.D. 531 returns with Belisarius to Constantinople.
A.D. 532 in Constantinople at time of the Nika riot.
A.D. 533 accompanies Belisarius to Africa as *assessor*. His mission to Syracuse.
A.D. 534 remains behind Belisarius in Africa, (as *assessor* to Solomon (?)).
A.D. 536 (end) joins Belisarius in Italy.
A.D. 539 returns with Belisarius to Constantinople.
A.D. 539-546 at Constantinople.
A.D. 545-6 engaged on the composition of his *Military History* in seven Books.
A.D. 546 probably proceeds to Italy, to follow the course of the war (cp. Haury, *Procopiana*, i. p. 9).
A.D. 548 back in Constantinople.
A.D. 550 completes and publishes his *Military History*, Bks. i.-vii.; writes his *Secret History*.
A.D. 553-4 writes and publishes the *Eighth Book of the Military History*.
A.D. 560 publishes his work on *Edifices*.
A.D. 562-3 Prefect of the City (?).

This is not the place to speak of the literary character of the works of Procopius except so far as it concerns their historical criticism. Procopius is an imitator of both Herodotus and Thucydides. How largely he used these ancient historians has been shown in two special monographs by H. Braun.[13] In geographical and ethnographical digressions, descriptions of strange incidents, dreams, &c., the influence of Herodotus is apparent; and the Herodotean conception of the supernatural, the power of fortune or fate, the envy of the gods, is adopted by Procopius. In the prefaces to his works, in speeches and letters, in descriptions of sieges, naval battles, plagues, Procopius takes Thucydides as his model.[14] It is curious to find not only John, the son of Vitalian, but Moors and other barbarians, spouting Thucydidean phrases. When we find incidents at the siege of Amida reproduced from the siege of Platæa, we have reason to doubt whether Procopius confined himself to adapting merely the *words* of his models.

It was recognized by Gibbon, and has been confirmed by later investigations, that in the history of events previous to his own time Procopius is untrustworthy; he was quite careless in selecting and using sources, and has been convicted of numerous errors.[15] It is hardly too strong to say, as has been said

[12] Theophanes, A.M. 6054. See Dahn, *Prokopius*, p. 452; Haury, *Procopiana*, i. p. 34. Suidas describes Procopius as an *illustris*.

[13] Procopius Cæs. quatenus imitatus sit Thucydidem, 1885 (Erlangen); Die Nachahmung Herodots durch Prokop, 1894 (Nürnberg).

[14] Brückner, *op. cit.*, p. 8 *sqq.*, gives a good summary.

[15] See the very full criticism of Brückner, *op. cit.*, p. 19 *sqq.* Cp. Ranke, *Weltgeschichte*, iv. 279. Also see above, vol. iii., Appendix 22.

by Brückner, that he shows want both of historical sense and of conscientiousness.

The politics of Procopius are marked by four prominent features: (1) Patriotism, based on the idea of the *Roman* world embodying a civilization inaccessible to the *barbarians;* (2) *Constitutionalism*, a worship of law and order; and, closely connected with this, (3) *Conservatism*, devotion to the old traditional customs of the Empire, and dislike of innovation as such; (4) Class sympathies with the *aristocracy* (aristocracy, of course, of wealth, not birth). This analysis of the political view of Procopius, which can be clearly traced in his Public History, is due to Panchenko;[16] the two last features had been well developed by Dahn.

As to religion, the historian generally uses the language of a sceptic and fatalist, regarding Christianity as an outsider with tolerant indifference, but never committing himself to any utterance against it. He wrote in fact (as Alemanni observed) as a *politicus*. But he was intensely superstitious; as diligent a seeker after oracles and dreams as Herodotus himself. I cannot resist the suspicion that the indifference of Procopius was to some extent an *affectation*, due to his admiration for the old classical writers and the pre-Christian Empire. Certainly in judging his fatalistic utterances we must take into account his imitation of Herodotus.

The much disputed question as to the genuineness of the *Secret History* has been set at rest by the researches of Dahn and Haury. Dahn's investigation (*op. cit.*) into the diction of this work, as compared with the undoubted writings of Procopius, has received greater significance in the light of the elaborate study of B. Panchenko (*O tainoi istorii Prokopiia*),[17] which contains an exhaustive analysis of the work. The matter was clinched by J. Haury's (*op. cit.*) determination of the chronology of the Procopian writings. His argument has been stated briefly above in the Introduction to vol. i. (p. lviii.).

In regard to the distinct question as to the credibility of the *Secret History*, it is important to observe that there is no fundamental opposition between it and the *Public History*. The political attitude of the writer (as described above) is the same in both documents. The result of that political attitude was bitter hostility to the reigning dynasty as (1) barbarian; (2) tyrannical, trampling on the constitution; (3) innovating; (4) oppressing the aristocracy. In the Public History criticisms on the Government had necessarily to be confined within certain limits, but they are often expressed freely enough. Procopius often puts his criticisms dexterously into the mouth of *enemies;* thus Totila censures the administration of Justinian in Italy. It is noticeable that Procopius never praises Justinian in the Military History; in the only passage in which he approaches commendation the commendation is of an ambiguous kind, and is interpreted as blame in the *Secret History*.[18] Procopius admired and regretted the government of Anastasius, as we know from the *Secret History;* and in his account of the Nika Sedition in the *Vandalica* it is not difficult to read between the lines his veiled sympathy with the nephews of Anastasius.

The first five chapters of the Secret History, relating to Belisarius and Antonina, form a sort of appendix to the Military History, and are distinguished by a relatively large number of references to the Military History. We must assume that between A.D. 545 and 550 events had occurred which prevented Procopius from any longer seeing in Belisarius a possible leader of a successful opposition to Justinian. The rest of the work deals with the family, the court, and the domestic administration of Justinian; it is a Civil, in contrast with the Military, History. It falls into two parts, of which the first is personal, dealing

[16] Viz. Vrem., 2, 355-366. There are some good remarks here on the use of Ῥωμαῖος and τυραννεῖν.

[17] Vizant. Vrem., ii. p. 24 *sqq.*, 340 *sqq.*; iii. 96 *sqq.*, 300 *sqq.*, 461 *sqq.*

[18] Vand. i. 9, p. 353, ἐπινοῆσαί τε ὀξὺς καὶ ἄοκνος τὰ βεβουλευμένα ἐπιτελέσαι. Hist. Arcan. c. 8, p. 57, ἐπινοῆσαι μὲν τὰ φαῦλα καὶ ἐπιτελέσαι ὀξύς. Cp. Brückner, *op. cit.*, p. 47.

with the private life of the sovran and his consort (cc. 6-17),[19] while the second treats his political administration. These parts are separated by a lacuna. In the last sentence of cap. 17 Theodora is the subject; in the first sentence of cap. 18 Justinian is the subject. It seems more probable that this break is due to the fact that the work was never revised by the author for publication than to an accidental loss in the course of its transmission.[20] It looks as if Procopius, when he finished c. 17, had started on a new plan, and had never welded the two parts together. It should be observed that there is no literary evidence as to the existence of the *Secret History* before Suidas (tenth century). There is no proof that it was used by Evagrius (notwithstanding Jeep's observations),[21] much less that it was known to Agathias.

The publication of the *Secret History* raised in arms the Jurists who revered the memory of Justinian, and the work was described as *Vaticana venena*. When it is recognized that there is no essential opposition between the point of view of the Military and that of the Secret History, that the hostility to the government, outspoken in the one, is present and, though veiled, constantly peers out in the other, the argument that the author's evidence is damaged by inconsistency and contradictions falls to the ground. When we make allowance for the bitter acrimony of the writer, and for his gross superstition, the fact remains that most of his statements as to the administration of Justinian and Theodora are perfectly *credible*. Many of them are directly supported by the notices of other contemporary writers; and others are indirectly supported by parallels or analogies found in contemporary sources. It is the great merit of the Russian scholar, B. Panchenko, to have examined[22] in detail the statements of the *Secret History* in the light of the contemporary evidence as to Justinian's reign; and the general credibility of the objective statements of the Procopian work has strikingly emerged. Of course, Procopius can be frequently convicted of unfairness; he always attributes the worst motives. His description of the profligacy of Theodora only proves his familiarity with the pornography of the stews of Constantinople; but it rests on the solid fact that the youth of Theodora was disreputable. We can appeal to the testimony of John of Ephesus (comment. de beatis orientalibus, ed. van Douwen and Land, p. 68): *Stephanum virum egregium duxit ad Theodoram* τὴν ἐκ τοῦ πορνείου, *quæ illo tempore patricia erat.*

[Literature: J. Eichel, Ἀνέκδοτα seu historia arcana Procopii . . . convicta, 1654; W. S. Teuffel, Procopius (in Studien und Charakteristiken, 1871); Reinkens, Anecdota sintne scripta a Procopio Caesariensi inquiritur, 1858; H. Eckhardt, De Anecdotis Procop. Caes., 1860; Ueber Procop und Agathias als Quellenschriftsteller für den Gothenkrieg in Italien, 1864; W. Gundlach, Quaestiones Procopianae, 1861; F. Dahn, *op. cit.*; A. Schulz, Procopius de Bello Vandalico, 1871; A. Auler, De fide Proc. Caes. in secundo bello Persico, &c., 1876; Ranke, Procopius von Cäsarea, in Weltgeschichte, iv. 2, p. 285 *sqq.*; Débidour, L'impératrice Théodore, 1885; Mallet, the Empress Theodora, in Eng. Hist. Review, 1887, Jan.; Kirchner, Bemerkungen zu Prokops Darstellung der Perserkriege des Anastasius, Justin und Justinian, 1887; H. Braun, *opp. citt.*; J. Haury, *opp. citt.*; J. Scheftlein, De praepositionum usu Procopiano, 1893

[19] Cc. 6-8, early life of Justinian; cc. 9-10, early life of Theodora, and how she ascended the throne; 11-14, Justinian; 15-17, Theodora. C. 17 ends with the story of John the Cappadocian, the point where the *Persica* also ends. Cp. Panchenko, *op. cit.*, ii. p. 343-4.

[20] Panchenko conjectures that this lacuna might be connected with the notable omission of any account of the conspiracy of Artabanus, which is recorded in bk. iii. of the Gothic War. But is it meant that such an account may have fallen out or that Procopius intended to insert it here, and never did so? See Panchenko, *op. cit.*, ii. p. 55, cp. p. 345. Panchenko makes it probable that there was no final redaction of the Secret History (346-7).

[21] Quellenuntersuchungen zu den griechischen Historikern, p. 161. Cp. the remarks of Panchenko, *ib.* p. 48-9.

[22] *Op. cit.*, *Viz. Vrem.* vol. iii.

M. Brückner, *op. cit.*; B. Panchenko, *op. cit.*; M. Krasheninnikov, O rukopisnom predanii Istorii Prokopiia, in Viz. Vrem. ii. p. 416 *sqq.*; art. on Procopius in Krumbacher's Gesch. der byz. Litteratur (ed. 2, 1896).

Editions. The Bonn ed. by Dindorf (1833-8) is not much better than the Paris ed. by Maltretus, which Gibbon used. These texts are founded on inferior Mss. Isambert's separate ed. of the Anecdota is poor (1856). A new much-needed complete ed. is promised by J. Haury, but the first three books of the Gothic War (based on the best Mss., and accompanied by an excellent Italian translation) by D. Comparetti have been issued in the series of Fonti per la storia d'Italia (1895-6).]

Agathias of Myrina (A.D. 536-582) practised as an advocate (*scholastikos*) at Constantinople, and combined law with literature. In his earlier years he wrote poems and epigrams; after the death of Justinian he devoted himself to history and continued the work of Procopius. His history "On the Reign of Justinian" embraces in five Books the years A.D. 552-558, and would have been continued if he had lived. Gibbon well characterises his work and contrasts him with Procopius (see above, p. 420), and notes the information on Persian affairs which he derived from his friend Sergius (vol. i., c. 8). He seems in general to have depended on oral sources for his narrative; he names most of the old writers whom he used for his digressions. [Ed. in the Bonn series by Niebuhr; in the Hist. Græc. Minores, vol. ii., by L. Dindorf. H. Eckhardt, Agathias und Prokop als Quellenschriftsteller für den Gothenkrieg, 1864; W. S. Teuffel, in Philologus, 1846, Bd. 1, 495 *sqq.*]

The history of the advocate Agathias was continued by an imperial guardsman, Menander *protector*. He had, however, the training of a jurist, as he tells us in his very interesting preface, where he describes the wild and idle life of his youth, which he reformed under the beneficent influence of the Emperor Maurice. His work covers the years A.D. 558-582; we possess very important fragments of it in the Constantinian excerpts *de legationibus* and *de sententiis*, and a few in Suidas. Evagrius drew from Menander (probably directly) for his fifth book. He was also used by Theophylactus Simocatta (for an excursus in Bk. iii. on the Persian wars of Justin II. and Tiberius. See below, vol. v., App. 1). [Müller, F. H. G. iv. p. 200 *sqq.*; L. Dindorf, Hist. Græc. Min. vol. ii.]

Johannes Rhetor, or Malalas (the Syriac equivalent of Rhetor),[23] of Antioch, published between A.D. 528 and 540 a chronicle beginning with the Creation and ending with the first months of A.D. 528 (Bks. 1-17). The work was re-edited and brought down (Bk. 18) to the death of Justinian[24] (A.D. 565). Neither the first edition, which was used by Evagrius (who cites it under the name of Johannes rhetor) nor the second (used by the Paschal Chronist, Theophanes, &c.) has come down to us; but we have materials sufficient for an almost complete restoration of the second edition. (1) The chief of these materials is the abridgment of the whole work; which is preserved in an Oxford Ms. of the eleventh century (Barocc. 182). The first pages of the Ms., with the title, are lost; and the work was identified by some passages verbally identical with passages which John of Damascus quotes from "John Malalas". (2) Next best to recovering the original second edition would be the recovery of the Slavonic translation made by the Bulgarian presbyter Gregory (c. A.D. 900).[25] Luckily, large parts of this, in Russian form, are preserved. (3) Numerous excerpts and fragments have been identified, and enable us to supplement the Oxford text. (*a*) Four Tusculan fragments, published in Mai's Spicil. Rom., vol. ii., part 3, and identified by

[23] Μαλάλας, not Μαλαλᾶς.

[24] Or, some think, to the ninth year of Justin, A.D. 574; because a Latin Laterculus of Emperors, taken from Malalas, comes down to that year. This document (compiled in the eighth century) is edited by Mommsen in Chron. Min. iii., p. 424 *sqq.* It seems to me more probable that the last entry was added, on his own account, by the author of an earlier Latin epitome which the eighth century compiler used.

[25] Krumbacher, on the authority of A. S. Chachanov, states that there is a Ms. of a Gregorian translation of Malalas at Tiflis (p. 329).

Patzig. (*b*) Excerpts from an anonymous Chronicler (end of ninth century) who copied Malalas, published in Cramer's Anecd. Par., 2, p. 165 *sqq.* (*c*) Constantinian excerpts περὶ ἐπιβουλῶν published from an Escurial Ms. by Mommsen in Hermes 6, 366 *sqq.* (*d*) The preface of Malalas, with the beginning of Bk. 1, in Cod. Par. 682 (tenth century), publ. by A. Wirth, Chronographische Späne, p. 3 *sqq.* (1894). (*e*) Excerpts in Cod. Par. 1336 (Cramer, Anecd. Par. 2, p. 231 *sqq.*). (4) The Paschal Chronicle (seventh century) and the Chronography of Theophanes (beginning of ninth century) extracted their material largely from Malalas, generally adhering verbally to the original. They are therefore very important for the restoration. (5) Other writers who used Malalas have also to be taken into consideration: John of Ephesus, Evagrius, John of Antioch (see below), John of Nikiu, John of Damascus, George Monachus, Cedrenus (indirectly).

The chronicle of Malalas gives the impression that it was compiled not by a rhetor but by a monk whose abysses of ignorance it would be hard to fathom. But though in itself a pitiable performance, it is, as Prof. Krumbacher observes, enormously important for the history of literature. It is the earliest example of the Byzantine monastic chronicle, not appealing to educated people, but written down to the level of the masses. There is no sense of proportion. The fall of an empire and the juggling of a mountebank are related with the same seriousness. Pages and pages are occupied with minute descriptions of the personal appearance of the heroes of the Trojan war. All manner of trivial gossip is introduced. The blunders are appalling; *e.g.*, Herodotus is placed subsequent to Polybius. The last Books, from Zeno forward, are important, because they are written by a contemporary, and Bk. 18 is one of our chief sources for the reign of Justinian. In this chronicle the conventional style of historic prose is deserted; popular idioms, words, and grammatical forms are used without scruple. Thus it is "the first monument of popular Greek, of any size, that we possess" (Krumbacher). It should be observed, however, that this style is not evenly preserved; in many places Malalas has preserved the better style of his sources. In Bks. 1-17 prominence is always given to events connected with his native city, Antioch.

Malalas-problems. When it was shown that the eighteenth Book of Malalas was added subsequently to the publication of the first seventeen[26] (see Mr. E. W. Brooks, Eng. Hist. Rev., 1892, vol. vii. p. 291 *sqq.*; cp. S. Shestakov, in the fifth part of the Zapiski of the University of Kazan, 1890), the question arose whether the work was thus revised and continued by Johannes himself or by another. If we adopt the former alternative, we are asked to suppose that Johannes migrated to Constantinople; for part of Bk. 18 appears to have been composed there, not at Antioch, though part of it shows Antiochene influence. The second alternative seems more likely, and, if it be adopted, the question arises whether the editor and continuator may not to a large extent be responsible for the style. He may be certainly considered responsible for obliterating (though not completely) indications of the monophysitic leanings of the original author. For this question see C. E. Gleye's important article *Zur Johannes-frage*, in Byz. Ztschrift., 1895, p. 422 *sqq.*

Bibliography. A full list of the numerous works dealing with the numerous Malalas questions will be found in Krumbacher, Gesch. der byz. Litt. (ed. 2), p. 332-4. Only a few need be mentioned here. (1) Editio princeps, Chilmead-Hody, Oxford, 1691, reproduced in the Bonn Corpus, 1831. The text contains many errors from which the Ms. is free and is otherwise inaccurate; see J. B. Bury, Collation of the Codex Baroccianus, Byz. Ztschrift., 1896, Bd. 6, Heft 2. A new edition, based on all the extant material, is expected from Dr. C. E. Gleye. (2) G. Sotiriadis, Zur Kritik von Johannes von Antiochia, 1888. E. Patzig, Unerkannt und unbekannt gebliebene Malalas-fragmente, 1891, and Johannes Antiochenus und Johannes Malalas, 1892. S. Shestakov, *op. cit.*, and a paper on the importance of the Slavonic translation for the Greek text in Viz.

[26] More precisely: the first paragraphs of Bk. 18 belonged to the first edition.

Vremennik, 1, p. 503 *sqq.* E. W. Brooks, *op. cit.* C. E. Gleye, *op. cit.*, and a paper on the Slavonic Malalas in the Archiv für Slav. Philologie, 16, p. 578 *sqq.* There is also much on Malalas in Gelzer's Sextus Julius Africanus (1880-5).

Quite distinct from the John of Antioch who was distinguished as Malalas is another JOHN OF ANTIOCH, to whom a large number of excerpts preserved in various Mss. are ascribed. His existence is confirmed by Tzetzes, but the questions of his date and his literary property are surrounded with the greatest difficulties. It is quite clear that his name covers two distinct chroniclers, of whom the earlier probably lived in the seventh century and the later in the tenth. But it is still a matter of controversy which is which. The matter is of considerable importance indirectly; it has even some bearings on historical questions (cp. above, vol. 3, Appendix 22); but the question is much too complicated to be discussed here, and no solution has been reached yet.[27] It will be enough to indicate the fragments in question. (1) The Constantinian fragments (excerpta de virtutibus and de insidiis), of which the last refer to the reign of Phocas; (2) fragments in Cod. Paris, 1630; (3) the "Salmasian" fragments of Cod. Par., 1763, of which the latest refer to Valentinian iii.; (4) fragments of the part relating to the Trojan War preserved in Codex Vindobonensis 99 (historicus), under the name of Johannes Sikeliotes. The first three groups were published by Müller, F. H. G. iv. p. 535 *sqq.*, and v. pp. 27, 28, while (4) is partly published in a gymnasial programme of Graz by A. Heinrich, 1892, p. 2-10. The two chronicles, represented by these fragments, may be distinguished as C and S; and the question is whether C, from which the Constantinian fragments, or S, from which the Salmasian fragments are derived, is the earlier work. S was a chronicle of the same style as that of Malalas or Theophanes, Christian and Byzantine; C was a work of "hellenistic" character and dealt with the Roman republic, which the true monkish chronographer always neglected. Cp. Patzig, Joannes Antiochenus, &c., especially p. 22, who upholds the view that S is the older, and that C was compiled in the ninth or tenth century. (Cp. the works of Sotiriadis, Patzig, Gleye, Gelzer, cited in connexion with John Malalas, and C. de Boor Hermes, 1884, B. 19, 123 *sqq.*; *ib.*, 1885, B. 20, 321 *sqq.*; Byz. Ztsch., 1893, B. 2, 195 *sqq.*)[28]

For the Persian wars in the reign of Anastasius we have the valuable Syriac history of JOSUA STYLITES, known to Gibbon through the abridged Latin translation of Assemani (Bibl. Orient., i. 262-283). The work is entitled "A history of the time of affliction at Edessa and Amida and throughout all Mesopotamia," and was composed in A.D. 506-7, the last date mentioned being 28 Nov., 506, but was probably not published till after the death of Anastasius. It contains a very graphic diary of the events at Edessa during a period of great distress. The narrative of the Persian invasion begins in c. xlviii. The original text was first published by the Abbé Martin (with French transl.) in Abh. of the Deutsche Morgenl. Gesellschaft, 6, 1 (1876); but this has been superseded by the edition of W. Wright, with an English version, 1882. The position of Josua in regard to the theological controversies of the day is treated by H. Gelzer in a paper in the Byzantinische Zeitschrift, i. p. 34 *sqq.* (1892). Josua was one of the sources of the CHRONICLE OF EDESSA (A.D. 201-540); see L. Hallier, in Texte und Untersuchungen, ix. 1, 1892.

The ecclesiastical history of ZACHARIAS Rhetor, bishop of Mytilene, composed about A.D. 518, throws little light on the political history which is the subject of the volume. But it was translated from Greek into Syriac and incorporated in a Syriac work, which was compiled about fifty years later, and goes generally by the name of Zacharias. The genuine Zacharias corresponds to Bks. 3-6 of the

[27] Prof. Krumbacher gives an excellent summary of the facts (§ 141) in his History of Byzantine Literature.

[28] Gelzer has conjectured that John of Antioch may be the same as John, Patriarch of Antioch, A.D. 631-649. The work would then have been composed before A.D. 631, as the author of the Constantinian excerpta de virtutibus is styled "John the monk". But I question whether it would have been forgotten that the author was Patriarch.

compilation, which consisted of twelve Books (Bk. 11 and part of 10 and 12 are lost). The pseudo-Zacharias has records of considerable value on the Persian wars and the founding of Daras, a curious notice on the Nika riot, &c. Fragments of the work, preserved in the Vatican, were published and translated by Mai (Scr. Vet. Coll. vol. x.), but the work in its more complete form was not known till 1870, when it was published by Land from a Ms. in the British Museum. (The genuine Zacharias has been translated by Rev. F. J. Hamilton, 1892, printed privately.)

C. Sollius Modestus Apollinaris Sidonius was born about 430-433 A.D. He belonged to a good Lyonese family; his father was Praetorian Prefect of Gaul in A.D. 449, a post which *his* father had held before him. Sidonius married Papianilla of Arverni, daughter of Avitus. His relations with that emperor and with his successors Majorian and Anthemius are noticed by Gibbon (c. xxxvi.). In A.D. 469 or 470 Sidonius became bishop of Arverni; he died, before he reached the age of fifty, in 479. The years of his episcopate were troubled, owing to the hostilities between the Visigoths and the Empire. Arverni in Aquitania Prima still, but alone, held out against the Goths, till 475, when Sidonius and Ecdicius his brother-in-law were captured by King Euric, and the bishop was compelled to live for some time in exile from his see, at Tolosa and Burdigala. His literary works consist of a collection of twenty-four poems, and of nine Books of Epistles. These epistles were written evidently with the intention of being published, and each Book appeared separately (Book i. published in 469, ii. in 472, v. in 474-5, vii. in 475 (?)). In many of the Letters original poems are inserted. Books iii. v. vii. and viii. contain letters of great importance for the history of the Visigoths. Sidonius had ceased to write longer poems before A.D. 469,—that is, before he began to publish letters and before his ecclesiastical career began. It may be convenient to arrange here the most important (most of which are mentioned by Gibbon) chronologically:

vii. Paneg. dictus Avito, with
vi. preface and
viii. propempticon — A.D. 456, Jan. 1.

v. Paneg. dictus Maioriano, with
iv. preface — A.D. 458 end.

xiii. ad Maiorianum. A.D. 458 (?).

xxiii. ad Consentium, between A.D. 461 and 466 (after Narbo, which the poem celebrates, had become Gothic, and before Theodoric, whom it also celebrates, died).

ii. Paneg. dictus Anthemio, with
i. preface and
iii. propempticon — A.D. 468, Jan. 1.

The poetical talent of Sidonius, like that of Claudian and of Merobaudes, was publicly recognized at Rome by a statue in the Forum of Trajan.

inter auctores utriusque fixam
bybliothecae.

The authoritative edition of his works is that of C. Luetjohann (in the Mon. Germ. Hist.), 1887, to which Mommsen has contributed a short biography of the poet. Mr. Hodgkin (Italy and her Invaders, vol. ii.) has an interesting chapter on Sidonius, with some prose and verse translations from his works.

The state of Noricum in the days of the last Emperors of the West is graphically described in the *Life of Saint Severinus* by an eye-witness, Eugippius, who was with the saint in Noricum when it was at the mercy of the Rugians and their fellow-barbarians. Severinus was buried in the Lucullan Castle near Naples, by the bounty of the lady Barbaria, and a monastery was established in the same place. Eugippius became its abbot, and wrote the biography of his master in A.D. 511. [Edition by H. Sauppe, 1877, in the Mon. Germ. Hist.]

The fragment of an Italian (Ravennate) chronicle, known as Anonymus Valesii, Part II., and recording the reigns of Odovacar and Theodoric, has been noticed already in vol. iii., Appendix 1, in connexion with the Chronica Italica. The chronicler made use of the *Vita Severini* of Eugippius. He writes from an Imperial point of view, speaks loyally of Zeno, and constantly describes Theodoric by the title *Patricius*, which keeps in mind that king's theoretical dependence on the Roman Empire. The language is full of barbarisms, and there seems very little probability in the conjecture of Waitz that the author is no other than Bishop Maximian of Ravenna, whose portrait has been immortalized in mosaics in the Church of San Vitale. The fragment is perhaps not continuous, but a number of extracts, bearing on Odovacar and Theodoric, strung together from the original chronicle (cp. Cipolla, *op. cit. infra*, p. 80 *sqq.*). It seems likely that the anonymous author wrote during the civil wars which followed the fall of the Ostrogothic kingdom.[29] Recently a very complete study, especially of the Mss., has appeared by C. Cipolla, in the Bullettino dell' Instituto storico italiano, No. ii. (1892, p. 7-98). Cp. especially sect. iv. p. 80 *sqq.* [For editions see above, vol. iii. p. 489. References to various monographs will be found in the article of Cipolla.]

Ennodius, the son of Gallic parents, was born A.D. 474, in Liguria, died A.D. 521. He may have been grandson of Ennodius, proconsul of Africa under Honorius and Theodosius II. His father's name may have been Firminus. He had a secular education in the Latin classics, and was consecrated by Epiphanius of Ticinum (whose life he wrote) before A.D. 496. He went to Milan, to fill a clerical post, before A.D. 499, and from Milan most of his letters are written. The life of Epiphanius was composed between A.D. 501 and 504 (see Vogel's preface to his ed. p. xviii.-xix.). All the works of Ennodius are included in the large edition of Vogel in the Mon. Germ. Hist., 1885. They form a very valuable supplement to Cassiodorus for the history of Italy under Theodoric. [Monograph: Fertig, Ennodius und seine Zeit, 1858.]

Cassiodorus has had the misfortune of being called out of his name. His full name was Flavius Magnus Aurelius Cassiodorus Senator, and in accordance with the custom of the time he was always known by the last name, *Senator*. We do not find him called Cassiodorus till the eighth century (by Paul the Deacon, Hist. Lang. i. 25); and even the name has been corrupted, modern scholars following Maffei in writing Cassiodorius. But Mommsen, who at first approved, has now condemned, this fashion, and adopts the true form in his edition of the works of Cassiodorus. This name points to the derivation of the writer's family from Syria. They settled at Scyllace and by the middle of the fifth century had become the most influential people in Bruttii. The father of Senator filled financial offices under Odovacar, administered Sicily, and embraced the cause of Theodoric, who rewarded him by the less distinguished post of corrector of Bruttii and Lucania. The inferiority of this post to the posts which he had already occupied may have been compensated for by the circumstance that the appointment was an exception to the rule that no man should be governor of his native province. But he was soon raised to be prætorian præfect (after A.D. 500). The son was born c. 490. At an early age (twelve or thirteen?) he became *consiliarius* to his father, and he became quaestor between the years 507 and 511 (cp. Mommsen, Procem. p. x.) and drew up state papers for the king. Then, like his father, he was appointed *corrector* of his native province; became consul ord. in A.D. 514; and was promoted to be *magister officiorum* before A.D. 526. In A.D. 533 Amalasuentha created him prætorian prefect, a post which he retained under Theodahat and Witigis. The dates of his chief works are: *Chronicle*, A.D. 519; Gothic History in twelve Books, between A.D. 526 and 533 (so Mommsen; Usener put it earlier, 518-21); publication of his *Variae*, A.D. 537. He also wrote various theological works (including a compilation of Church History from Socrates, Sozomen and Theodoret, entitled *Historia tripartita*; in this work he had a collaborator, Epiphanius). He survived A.D. 573. He had thrown himself thoroughly

[29] Mommsen, Chron. Min. i. 261.

into the Gothic interest, and both the official and private correspondence contained in his *Variae* (epistolae) are a most valuable mine for the history of the Ostrogothic kingdom. His weak point was inordinate literary vanity, and the tumid pomposity of his style, tricked out with far-fetched metaphors and conceits, renders it often a task of considerable difficulty to elicit the sense. Mr. Hodgkin observes that, next to Rhetoric, "Natural History had the highest place in his affections. He never misses an opportunity of pointing a moral lesson by an allusion to the animal creation, especially to the habits of birds." A short extract found in a Ms. of the *Institutiones humanarum rerum* of Cassiodorus, at Carlsruhe, and known as the Anecdoton Holderi, was edited with a commentary by H. Usener in 1877. It threw new light on some points connected with the statesman's biography. The Variae have been edited in a splendid edition by Mommsen (in Mon. Germ. Hist., 1894). A large volume of selected translations has been published by Mr. Hodgkin.

The Chronicle (or Consularia) of Cassiodorus was drawn up in A.D. 519, on the occasion of the consulship of Theodoric's son-in-law, Eutharic Cillica. The sources which he used were: (1) The Chronicle of Jerome; (2) the Chronicle of Prosper, in the edition published in A.D. 445 (cp. above, vol. iii., Appendix 1), for the years subsequent to the end of Jerome's Chron.; (3) an epitome of Livy; (4) the history of Aufidius Bassus; (5) Eutropius; (6) the Paschale of Victorius; (7) Consularia Italica (see above, vol. iii., App. 1). "Written for the use of the city populace," as Mommsen remarks, it contains many entries relating to games and the buildings in Rome, and it is marked by some interesting blunders in grammatical form. Finding in his source, for instance, *Varane et Tertullo conss.* (A.D. 410), Cassiodorus translating this into the nominative case gives *Varan et Tertullus*. See Mommsen, Chron. Min. ii., p. 112. In the later part of the work he has made several slight additions and changes of his own in the notices which he copies from his authorities, out of regard for Gothic feelings. Thus Prosper recorded that Ambrose of Milan wrote "in defence of the *Catholic* faith". But the Goths were Arians; and so Cassiodorus modifies the phrase to "concerning the *Christian* faith". Again Prosper simply states that "Rome was taken by the Goths under Alaric"; Cassiodorus adds that "they used their victory with clemency". The best edition is Mommsen's in Chron. Min. ii., p. 120 *sqq.*

Flavius Cresconius Corippus, a native of Africa, seems to have held the office of a tribune or a notary, in that branch of the civil service of which the quaestor of the Sacred Palace was the chief.[30] He was an old man at the death of Justinian.[31] He wrote two poems relating to contemporary history, both of the greatest interest and importance. (1) The *Johannid* celebrates the Moorish wars of Johannes, who was appointed Magister Militum in A.D. 546 (see below, Appendix 18). It was unknown to Gibbon and was published for the first time by Mazzucchelli (librarian of the Ambrosian library) from the Codex Trivultianus, the only Ms. now known to exist. (Other Mss. known in the Middle Ages and as late as the sixteenth century have disappeared.) The poem contains eight Books; the end of the eighth Book is missing, and there are other lacunae.[32] Corippus introduces a sketch of the events in Africa which preceded the arrival of John (3, 54-4, 246); describing the career of Antala, the wars of Solomon and Areobindus. The poem must have been composed soon after the decisive victory of John in A.D. 548. The respect shown for Athanasius, the prætorian prefect, suggests that he was still in office when Corippus wrote. (2) Towards the end of Justinian's reign Corippus went to Constantinople, where he was present at the

[30] See Panegyr. in laudem Anastas. 46-48.

[31] *Ib.*, 48.

[32] In the ed. princeps and the greatly improved Bonn ed. by Bekker, it is divided into seven Books, as if the whole eighth were missing. But G. Loewe has shown that Books 4 and 5 were wrongly thrown into one, so that 5, 6, 7 should be 6, 7, 8; and so it appears in Partsch's ed.

coronation of Justin II. In connexion with this Emperor's accession he wrote his *In laudem Justini Augusti minoris*, hoping that the sovereign would help him in his need. For he seems to have lost his property in the troubles which broke out in Africa a few years before (see below, p. 544). Compare, Praefatio, 43, nudatus propriis. This poem consists of a preface, a short panegyric on Anastasius the quaestor (who probably undertook to introduce Corippus to the Emperor) and four Books. It has been repeatedly edited, and has been well elucidated by Fogginius (1777). For its contents see Gibbon, c. xlv. The critical edition of Joseph Partsch (in the Mon. Germ. Hist.), 1879, has superseded all previous works. Corippus, it may be observed, though a poor poet compared with Claudian, is far more satisfactory to the historian. He has no scruples about introducing barbarous names into his verse, and is consequently less allusive. His account of the Moorish nations is of great importance for the geography of North Africa. We meet such names as Silcadenit, Naffur, Silvaizan ; such a line as,

Astuces, Anacutasur, Celianus, Imaclas.

Count MARCELLINUS was of Illyrian birth and Latin was his native tongue. He was *cancellarius* of Justinian, before Justinian ascended the throne and probably when he held the post of *magister equitum et peditum in praesenti*. Some years later, before the death of Justin, he wrote and edited a chronicle, beginning with the accession of Theodosius I., where Jerome stopped, and coming down to the death of Anastasius ; afterwards he continued it to A.D. 534. (Another contemporary but anonymous author subsequently brought it down to A.D. 548.) The sources of Marcellinus were Orosius, the Consularia of Constantinople (see above, vol. ii., Appendix 1), the Consularia Italica, Gennadius' continuation of Jerome's *de Viris illustribus*, and one or two ecclesiastical works (for instance a life of Chrysostom, similar to that of Palladius). See preface to Mommsen's edition in Chron. Min., vol. ii., p. 39 *sqq*. Marcellinus contains some important notices of events in Illyricum ; and for Anastasius, Justin and Justinian, his statements—always provokingly brief—have a very high value.

VICTOR TONNENNENSIS,[33] an African bishop, wrote under Justinian and Justin II. a chronicle from the Creation to the year A.D. 566. We possess the most important part of it from A.D. 444 forward. For Victor's life we have some notices in his own chronicle and a notice in Isidore's De viris illustribus, c. 49, 50. He took part with the western churchmen against Justinian in the Three Chapter Controversy, and was banished, first to the Balearic islands (a certain emendation of Mommsen in Victor, *sub ann.* A.D. 555), and after other changes of exile, to Egypt ; finally in A.D. 564-5 he was removed to Constantinople. He wrote his work during his exile. Mommsen has shown that he made use of Western Consularia from A.D. 444 to 457 ; of Eastern Consularia from A.D. 458 to 500 (except for A.D. 460, 464, 465) ; but of Western again from A.D. 501-563. In A.D. 563 he suddenly and unaccountably ceases to date by consulships, and begins to date by the years of Justinian's reign. It is to be observed that in marking the years after Basil's consulate A.D. 540 he departs from the usual practice ; he calls A.D. 541 not the first but the *second* year post consulatum Basilii. It is very curious that he makes a mistake about the year of Justinian's death, which he places in Ind. 15 and the fortieth year of his reign, though it really took place in Ind. 14, ann. regn. 39. [Edition : Mommsen, Chron. Min., 2, p. 178 *sqq*.]

The chronicle of Victor was continued by a Visigoth, JOHN OF BICLARUM. He too, like Victor, suffered persecution for his religious opinions. He had gone to Constantinople in his childhood, learned Latin and Greek, and had been brought up in the Catholic faith. At the age of seventeen he returned to Spain,

[33] He was bishop of the ecclesia Tonnennensis (or Tonnonnensis, or Tunnunensis) in the prov. Carthaginiensis. I follow the spelling adopted by Mommsen, which depends on a very probable conjectural restoration in an inscription (C.I.L., 8, suppl. 12,552). The termination of the local name from which the adjective is formed seems to be unknown.

c. A.D. 576, and was banished to Barcino by the Arian king Leovigild on account of his religious opinions. Exiled for ten years (till A.D. 586), he was released by Leovigild's Catholic successor Reccared, and founded the monastery of Biclarum (site unknown). Afterwards he became bishop of Gerunda, and there is evidence that he was still alive in A.D. 610. His chronicle differs from most others in that it can be studied by itself without any reference to sources. For he derived his knowledge from his own experience and the verbal communications of friends (*ex parte quod oculata fide pervidimus et ex parte quae ex relatu fidelium didicimus*). He professes to be the continuator of Eusebius, Jerome, Prosper, and Victor. At the outset he falls into the mistake which, as we saw, Victor made as to the date of Justinian, and places it in the fifteenth indiction. This led to a misdating of the years of Justin II., and he commits other serious chronological blunders. Mommsen, Chron. Min. ii. p. 209. His chronicle ends with the year A.D. 590. It is worthy of note that John always speaks with the highest appreciation of the Gothic king Leovigild, who banished him. [Ed. Mommsen, Chron. Min. ii. p. 207 *sqq.*]

Fragments of the Chronicle of MAXIMUS of Cæsaraugusta have been preserved in the margin of Mss. of Victor and John of Biclarum, extending over the years A.D. 450 to 568 (perhaps to 580). Mommsen, Chron. Min. ii. p. 221-3.

MARIUS (c. A.D. 530-594), bishop of Aventicum (Avenches), wrote a chronicle extending from A.D. 455 to 581. Mommsen has shown that he made use of the Consularia Italica and the Chronica Gallica (cp. above, vol. iii., Appendix 1, p. 489). [Editions: Arndt, ed. maior, 1875, ed. minor, 1878; Mommsen, Chron. Min. ii. p. 227 *sqq.*]

ISIDORUS JUNIOR became bishop of Hispalis (Seville) c. A.D. 600-3, and died in the year A.D. 636. He wrote a History of the Goths, Vandals, and Sueves, coming down to the year A.D. 624. It is preserved in two recensions, in one of which the original form has been abbreviated, in the other augmented. The sources of Isidore were Orosius, Jerome, Prosper (ed. of A.D. 553), Idatius, Maximus of Saragossa, John of Biclarum. He used the Spanish æra (= Christian æra + 38); Mommsen has drawn up a most convenient comparative table of the dates (Chron. Min., ii., p. 246-251). Isidore is our main source for the Spanish history of the last hundred years with which he deals. [Ed. Mommsen, Chron. Min., ii. 241 *sqq.*, to which are appended various Additamenta and Continuations. Monograph: H. Hertzberg, Die Historien und die Chroniken des Isidorus von Seville, 1874; Hertzberg's conclusions have been modified by Mommsen.]

GREGORY OF TOURS in his Historia Francorum (best edition by Arndt and Krusch in the M.G.H.), although he wrote in the last quarter of the sixth century, throws some light on the great Hunnic invasion of Gaul and the career of Aetius, especially by his citations from a lost writer, Renatus Profuturus Frigeridus. For the reigns of the Frank kings Childeric and Chlodwig he is our main guide. The sources of his history have been carefully analysed and its value tested by M. Monod (in his *Etudes Critiques sur les sources de l'histoire mérovingienne*, 1872) and G. W. Junghans, whose history of the reigns of Childeric and Chlodwig has been translated into French by M. Monod, with additional notes. Gregory's narrative of these reigns is based in a small part on written documents,—consular annals,—and to a great extent on popular and ecclesiastical traditions. To the first class belong bk. ii., chaps. 18 and 19, on Childeric; the account of the Burgundian war, A.D. 500, in chaps. 31 and 33; and a few other facts and dates. Such a notice, for instance, as:

Chlodovechus rex cum Alarico rege Gothorum in campo Vogladense decimo ab urbe Pictava miliario convenit—

clearly comes from a chronicle. On the other hand the story of Childeric's flight to Thuringia and marriage with Basina is clearly from an oral source and has undergone the influence of popular imagination. The Annals which Gregory used in chaps. 18 and 19 are conjectured to have been composed in Angers.

The determination of the chronology of Chlodwig's reign would be impossible from Gregory's data alone; it depends on certain data of his contemporary, Marius of Aventicum, who made use of the lost South-Gallic Annals (see above). Thus

Marius gives A.D. 548 for the death of Theudebert and A.D. 561 for the death of Chlotachar. We know from Gregory (*a*) that thirty-seven years elapsed between the death of Chlodwig and that of Theudebert, and (*b*) that Chlotachar died in the fifty-first year of his reign. These data combined point to A.D. 510 or 511 as the year of Chlodwig's death. The date subscribed to the acts of the Council of Orleans (July 10, 511), held when Chlodwig was still alive, proves that the latter is the true date.

MODERN WORKS. Hodgkin, Italy and her Invaders, vol. ii. for the last western emperors, vol. iii. for Odovacar, Theodoric, and events in Africa and Italy up to A.D. 535, vol. iv. for the Imperial Restoration. Ranke, Weltgeschichte, vol. iv. J. C. Manso, Geschichte des ost-gothischen Reiches in Italien (1824). Dahn, Könige der Germanen. R. Köpke, Die Anfänge des Königthums bei den Gothen. Papencordt, Geschichte der Vandalen. For the overthrow of the Vandals and Imperial settlement of Africa: C. Diehl, L'Afrique Byzantine (1896). For oriental affairs: Rawlinson, Seventh Oriental Monarchy. For the economic state of the empire under Justinian: Finlay, Hist. of Greece, vol. i.

Monographs: Lord Mahon (afterwards Earl Stanhope), Life of Belisarius; Hodgkin, Theodoric the Goth, 1891; Bryce, Justinian (in the Dictionary of Christian Biography); A. Debidour, L'impératrice Théodora (1885); A. Rose, Anastasius I. (1882). On the military establishment of the Empire in Justinian's reign, C. Benjamin, De Iustiniani imp. aetate quaestiones militares, 1892. Many others are referred to elsewhere in this volume.

2. ODOVACAR'S GRANT TO PIERIUS

An interesting memorial of the administration of Odovacar survives in a deed of donation to his Count of Domestics, Pierius. The papyrus document (dated at Ravenna in A.D. 489) is preserved in two parts, of which one is at Naples, the other at Vienna. It was published in 1805 in Marini's *Papiri diplomatici*, but the English reader will find it convenient to consult the text (with a clear exposition) in Hodgkin's *Italy and her Invaders*, iii. note B. (p. 165 *sqq.*). Odovacar granted his minister estates which were to yield an income amounting to the value of about £414. These estates were (1) in the territory of Syracuse, (2) the island of Meleda on the Dalmatian coast. Pierius had already received these lands, but, as they only produced about £390, Odovacar completes in this document the promised revenue by adding some small farms to the Syracusan estate, calculated to yield £24 9*s*. (so that Pierius gained an additional 9*s*. or $\frac{3}{4}$ of a solidus). The document is not signed by Odovacar. It is probable, as Dahn observes (Kön. der Germanen, ii. 48), that he could not write.

3. THE ORIGIN OF MONASTICISM—(C. XXXVII.)

For his account of the beginnings of monasticism in Egypt, Gibbon has not given to the Abbot Pachomius his due place, and seems almost to regard him as merely a follower of Antony. Nor has he perhaps brought out with sufficient distinctness the contrast between the hermits and the monks.

The best known authorities for the origin of Egyptian monasticism are Rufinus, Palladius, and Sozomen. But the accounts of these three writers are, for the most part, not independent. All three, as has been proved by the researches of Lucius and Amélineau, go back to common sources,—works which were written in the Coptic of Upper Egypt, but were probably accessible in a Greek form before the year A.D. 400. The *Historia Lausiaca* of Palladius depends entirely on such sources for Upper Egypt; but the account of the monks of Lower Egypt is based on the author's personal investigations as well as on literary (Coptic) sources.

One of the most important of the sources of Palladius and Sozomen for the monastic foundations of Upper Egypt was the Coptic Life of the great founder

himself, the Abbot Pachomius; and this biography is fortunately preserved to us in various recensions. There are (*a*) some fragments of the original Life, as it was written down in the Coptic of Upper Egypt, after the death of Pachomius, by monks of Phbôou; (*b*) a late Arabic version; (*c*) a version in the Coptic of Lower Egypt; (*d*) three Greek recensions, and a Latin translation of a fourth, by Dionysius Exiguus (a Roman abbot of the sixth century). The two most important Greek recensions were published in the Acta Sanctorum, May, vol. iii. (p. 25 *sqq.*); the Coptic and Arabic versions (French translation) have been recently given to the world by Amélineau (Annales du Musée Guimet, xvii., 1889). This publication of Amélineau has put the historical investigation of the work of Pachomius on a new footing. The Coptic and Arabic versions bring us much nearer to the original form of the biography of the saint. We have only one Greek source that does not depend on a Coptic original: a Letter of Bishop Ammon to the Patriarch Theophilus of Alexandria (c. 400 A.D. ?),—an important document (Acta Sanctt. May, vol. iii., p. 63 *sqq.*). The mutual relations of all these sources have been investigated in a valuable monograph by Dr. Grützmacher, Pachomius und das älteste Klosterleben, 1896.

Pachomius was born in A.D. 285, founded his first cloister at Tabennisi c. A.D. 322, afterwards made the cloister of Phbôou his residence, died in A.D. 345. (These dates have been determined by Gwatkin and Grützmacher.) But in his youth, before he became a Christian, Pachomius lived as a monk of Serapis at Schénésit or Chenoboscium, near Diospolis in the southern Thebaid. His biography states that he occupied himself with growing palms and vegetables, which supplied both his own needs and those of poor neighbours and travellers. We must not indeed derive Egyptian monasticism from the cult of Serapis by the recluses who lived together in his temples; but it can hardly be denied that this heathen institution had a considerable influence on the Christian ascetics, and it is significant that the founder of monastic communities had been a recluse of Serapis. The tonsure seems undoubtedly to have been borrowed from the practice of the votaries of the Egyptian deity.

Between the solitary cell of Antony and the organized monastery of Pachomius, there was the intermediate stage of colonies of hermits. Pachomius joined a colony of this kind, which was under the guidance of Palaemon, south of Chenoboscium. Here he became convinced that life in a society of recluses was a more perfect state than the solitary life of an anachoret; and conceived the idea of a strict organization.

The clergy were at first bitterly opposed to the monastic spirit. The struggle comes out in the Coptic and Arabic recensions of the Life of Pachomius; it has been softened down and almost disappears in the Greek versions. The bishops and clergy persecuted the monks. The Church, however, soon found it necessary to reconcile itself to a movement which was far too strong to be suppressed and to concede its approval to the monastic ideal. This reconciliation was due to the wisdom of the Patriarch Athanasius. It has been well said that his Life of S. Anthony is the seal which the Church set on its recognition of the new movement (Grützmacher).

[Literature. Helyot's great Histoire des ordres monastiques was used by Gibbon. German works by Fehr, Biedenfeld, Möhler, and Evelt are cited by H. Richter, das weström. Reich, p. 674; also Mangold, de monachatus origine et causis. Weingarten, Der Ursprung des Mönchtums im nachkonstantinischen Zeitalter, 1877 (advocates the Serapean origin of monasticism). Harnack, Das Mönchtum, seine Ideale und seine Geschichte, 1886. Mayer, Die christliche Askese, ihr Wesen und ihre geschichtliche Entfaltung, 1894. Amélineau, *op. cit.*, and Etude historique sur St. Pachome, 1888. Grützmacher, *op. cit.* For the monks of Serapis: Revillout, Le reclus du Sérapeum, in the Rev. Egyptol., 1880, vol. i. On the sources of Palladius, &c.: Lucius, Ztschrift. für Kirchengeschichte, 7, p. 163 *sqq.* (1885). For the Regula of St. Pachomius, we have now (besides Palladius, Sozomen, the version of the Vita Pachomii, by Dionysius Exiguus), as well as the Arabic version of the Vita Pachomii, also an Ethiopic

recension. It was published by Dillmann in 1866 (in his Chrestomathia æthiopica) and has been translated by König in Studien und Kritiken, 1878.]

The history of monasticism in Palestine, where Hilarion (A.D. 291-371) occupies somewhat the same position as Pachomius in Egypt, is derived from the lives of the great abbots (Hilarion, Chariton, Euthymius, Sabas, Theodosius, &c.) as well as the ecclesiastical historians. The recent work on the subject by Father Oltarzhevski (Palestinskoe Monashestvo s iv. do vi. vieka, 1896), though it contains a great deal of material, seems to be superficial and unmethodical.

4. THE GOTHIC ALPHABET OF ULFILAS—(P. 76)

The statements of Gibbon that the alphabet of Ulfilas consisted of twenty-four letters, and that he invented four new letters, are not quite accurate. The Goths before Ulfilas used the Runic alphabet, or *futhorc* (so called from the first six letters), consisting of twenty-four signs. Ulfilas based his alphabet on the Greek, adopting the Greek order; and adapted it to the requirements of Gothic speech. But his alphabet has twenty-five letters; five of them are derived from the Runic, one from the Latin (S), and one is of uncertain origin. This uncertain letter has the value of Q, and corresponds, in position in the alphabet, to the Greek numeral *sigma* (between E and Z). It is remarkable that the letters Θ and Ψ are interchanged. Ψ is adopted to represent *th*, and occupies ninth place, corresponding to Θ, while Θ is used for the sound W and holds the place coresponding to Ψ. Thus the two additional symbols which Gibbon selects for special mention are Greek, but applied to a different use. The English equivalents of the Gothic letters are as follows, in alphabetical order:—

A, B, G, D, E, Q, Z, H, Th, I, K, L, M, N, J (runic), U (runic), P, R (runic), S, T, V, F (runic), Ch, W, O (runic).

5. THE SAXON CONQUEST OF BRITAIN—(P. 145)

In regard to Vortigern's invitation, Mr. Freeman observes (Norman Conquest, i. 13-14):—

"The southern Britons were now exposed to the attacks of the Picts and Scots who had never submitted to the Roman yoke, and there is no absurdity in the familiar story that a British prince took Teutonic mercenaries into his pay, and that these dangerous allies took advantage of the weakness of their hosts to establish themselves as permanent possessors of part of the island. But if the account be rejected, the general narrative of the Conquest is in no way affected; and, if it be accepted, we may be sure that Vortigern's imitation of many Roman precedents did but hasten the progress of events. The attempts which had been checked while the Roman power was flourishing were sure to be renewed when the check was withdrawn, and if a Welsh King did invite a Jutish chieftain to defend him, that invitation was only the occasion, and not the cause, of the conquest which now began."

The conquest began about the middle of the fifth century; but, as Mr. Plummer observes (in his ed. of Bede, vol. ii., p. 27), it is improper to interpret Bede as committing himself (in B. i. 15) to the year A.D. 449 for the first coming of the Saxons. "Bede never professes to know the exact year . . . he always uses the word 'circiter' in reference to it"—and *circiter* covers A.D. 446-457.

In earlier times of course the shore of Britain was exposed to the raids of Saxon pirates, against which the Count of the Saxon shore had to guard. For the *littus Saxonicum* meant the shore exposed to Saxon pirates, not the shore colonized by Saxon settlements. Cp. Freeman, *op. cit.*, p. 11, note 2; Stubbs, Const. Hist. of England, i. p. 64.

For the Saxon conquest in general see Guest, Origines Celticae, vol. ii.; Freeman, *op. cit.*, cap. 2; J. R. Green, Making of England. The Ecclesiastical

History of Bede (with his other works) has been edited by Mr. Plummer (1896)—a truly admirable edition; and by Mommsen in the Chronica Minora, vol. iii., which also includes Gildas and Nennius. The chief work on Nennius is H. Zimmer's *Nennius vindicatus*, 1893.

6. GIBBON ON THE HOUSE OF BOURBON—(P. 165)

"A Julian or Semiramis may reign in the North, while Arcadius and Honorius again slumber on the thrones of the House of Bourbon."

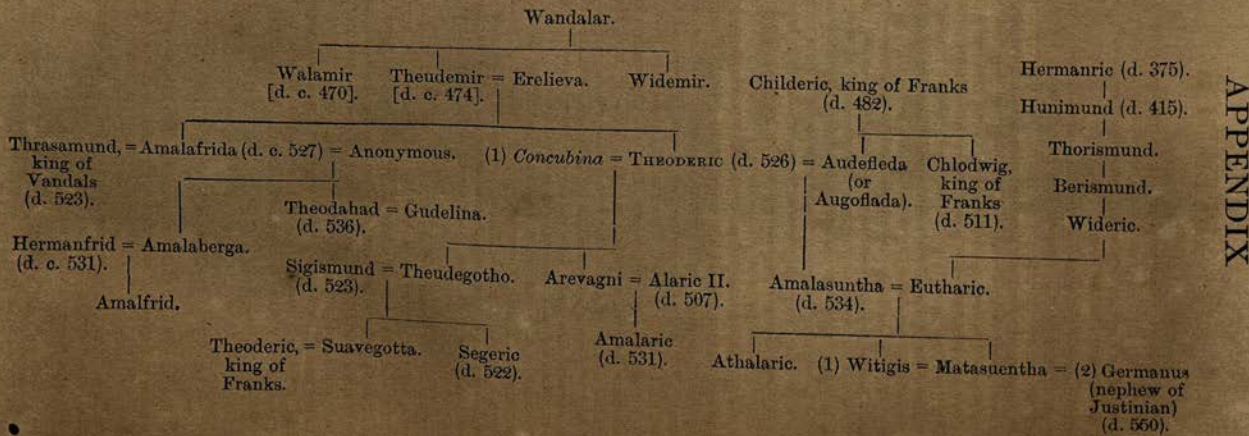
Thus the passage appeared in the first quarto edition (1781). In his Autobiography (Memoir E, in Mr. Murray's edition, 1896, p. 324) Gibbon makes the following statement in a footnote:—

"It may not be generally known that Louis XVI. is a great reader, and a reader of English books. On the perusal of a passage of my History (vol. iii. p. 636), which seems to compare him with Arcadius or Honorius, he expressed his resentment to the Prince of B——, from whom the intelligence was conveyed to me. I shall neither disclaim the allusion nor examine the likeness; but the situation of the *late* King of France excludes all suspicion of flattery, and I am ready to declare that the concluding observations of my third Volume were written before his accession to the throne."

Gibbon, however, altered the words "House of Bourbon" to "South" in his later edition, thus making the allusion ambiguous.

7. FAMILY POLICY OF THEODORIC—(P. 183)

Theodoric's system of connecting himself by matrimonial alliances with the Teutonic monarchs of Western Europe will be illustrated by a genealogical table.



8. AN INSCRIPTION OF THEODORIC—(P. 193)

The inscription on the draining of the Pomptine marshes by Theodoric, preserved at Mesa, is as follows:

D(ominus) n(oster) glrsmus [= gloriosissimus] adq(uc) inclyt(us) rex Theodericus vict(or) ac triumf(ator), semper Aug(ustus), bono r(ei) p(ublicae) natus, custos libertatis et propagator Rom(ani) nom(inis), domitor gtium [= gentium] Decennovii [1] viae Appiae id (est) a Trip(ontio) usq(ue) Tarric(inam) iter et loca quae confluentib(us) ab utraq(ue) parte palud(ibus) per omn(es) retro princip(es) inundaverant [2] usui pub(li)co et securitate [leg.—*ati*, Mommsen] viantium admiranda propitio deo felic(ita)te restituit; operi iniuncto naviter insudante adq(ue) clementissimi princip(is) feliciter deserviente p(rae) coniis ex prosapie Deciorum Caec(ina) Mav(ortio ?) Basilio Decio v(iro) c(larissimo) et ill(ustri) ex p(ræfecto) u(rbi) ex p(raefecto) p(raetorio), ex cons(ule) ord(inario) pat(ricio), qui ad perpetuandam tanti domini gloriam per plurimos qui non ante [*fuerant* suppl. Mommsen] albeos deducta in mare aqua ignotae atavis et nimis antiquae reddidit siccitati.

See Corp. Inscr. Lat., X., p. 690 *sqq*.

9. JUSTINIAN'S POSITION IN JUSTIN'S REIGN—(P. 207, 208)

Procopius in his *Secret History* ascribes to Justinian supreme influence in political affairs during the whole reign of his uncle Justin, and even dates the beginning of Justinian's rule from A.D. 518, as has been shown by Haury (Procopiana, 1891). In this connexion it may be pointed out that the Codex Ambrosianus, G. 14 sup. (= Cod. Pinellianus) preserves in c. 19 a notice which does not occur in the Mss. on which the text of Alemannus is based. It is given by M. Krasheninnikov in a paper on the Mss. of the Secret History (in Viz. Vremenn. ii. p. 421). After the words διακόσια καὶ τρισχίλια χρυσοῦ κεντηνάρια the original text of Procopius proceeded: ἐν δημοσίῳ ἀπολιπεῖν ἐπὶ μέντοι Ἰουστίνου ἔτη ἐννέα τὴν αὐτοκράτορα ἀρχὴν ἔχοντος τούτου Ἰουστινιανοῦ ξύγχυσίν τε καὶ ἀκοσμίαν τῇ πολιτείᾳ προστριψαμένου τετρακισχίλια κεντηνάρια κ.τ.λ.

Panchenko (Viz. Vrem. iii. p. 104) calls attention to the statement of Leontius of Byzantium (cp. Loofs, Leontius, p. 146; Migne, P. G. 86, 1229): ἀποθανόντος δὲ Ἀναστασίου γίνεται βασιλεὺς Ἰουστῖνος ὁ πρῶτος καὶ ὡς μετὰ ἕνα ἥμισυ ἐνιαυτὸν εὐθέως Ἰουστινιανός. τούτου δὲ βασιλεύοντος . . . ὁ Σεβῆρος φεύγει εἰς τὴν Ἀλεξάνδρειαν. Does the date refer to the position of Justinian after the death of Vitalian, A.D. 520?

In regard to the death of Vitalian, it has been urged for Justinian that his guilt rests on the evidence of the Secret History, Evagrius, and Victor Tonn.; that Victor does not vouch himself for the charge against Justinian (his words are: Justiniani patricii factione *dicitur* interfectus esse), and that Evagrius derived his information from the Secret History; thus the statements of the Secret History would be practically unsupported. See Loofs, *Leontius von Byzanz*, p. 259. There is no proof, however, that Evagrius knew the Secret History; it is certain that Vitalian was slain *in the Palace* (John Malal., p. 412); and we may, with Panchenko (Viz. Vrem. iii., p. 102), ascribe some slight weight to the principle *cui profuit*.

10. THE DEMES OF CONSTANTINOPLE—(P. 220)

The view of Gibbon that the popular dissensions of the *demes* (δῆμοι) or *parties* (μέρη) which distracted Constantinople, Antioch, and other cities of the East in

1 This name seems to have been then applied to the whole marsh from Tripontium to Tarracina (Mommsen).

2 = Sub aqua fuerunt (Mommsen).

the sixth century had their root and origin in the exuberant licence of the hippodrome; that the acts and demonstrations of the Greens and Blues were purely wanton outbreaks of a dissolute populace; that the four *demes* had no significance except in connexion with the races of the hippodrome; this view has held its ground till the other day, though it is open to serious and by no means recondite objections. The brilliance of Gibbon's exposition has probably helped to maintain it. The French historian and politician, M. A. Rambaud, wrote a thesis to prove that the "parties" were merely factions of the hippodrome (τὰ μέρη *nihil nisi hippicas fuisse factiones, op. cit. infra*). But on this view the name δῆμοι is quite inexplicable, and the part played by the Blues and Greens (with the Reds and Whites, who were submerged in them respectively as integral subdivisions) in the Ceremonies of the Imperial Court as described by Constantine Porphyrogennetos (in the *De Cerimoniis*) points to a completely different conclusion. These considerations led Th. Uspenski to the right view of the demes as organized divisions of the population. He worked out this view in a paper in the Vizant. Vremennik (Partii Tsirka i dimy v Konstantinopolie), vol. i., p. 1-16. The data of Constantine's Book of Ceremonies show that the demes were divided into civil and military parts, which were called respectively *Political* and *Peratic*. The *Political* divisions were under demarchs; while the *Peratic* were subject to *democrats*. The democrat of the Blues was the Domestic of the Scholae; the democrat of the Greens was the Domestic of the Excubiti; and this circumstance proves the original military significance of the Peratics. That the demes had an organization for military purposes comes out repeatedly in the history of the sixth century. For example, the Emperor Maurice on one occasion "ordered the demes (τοὺς δήμους) to guard the Long Walls".[1] The Emperor Justinian, when the inhabitants of the country near Constantinople fled into the city before the invasion of Zabergan, is said to have "enrolled many in the demes,"[2] and sent them to the Long Wall. It is highly probable that the dissatisfaction of the people of Constantinople with the Emperor Maurice (against whom *both Blues and Greens* combined, although they were divided on the question of his successor) was due to his imposing upon them increased military duties.

The political significance of the demes is unmistakable in such a passage as Theophanes' notice of the accession of Justin (p. 165, ed. de Boor): ὁ δὲ στρατὸς καὶ οἱ δῆμοι οὐχ εἵλαντο Θεόκριτον βασιλεῦσαι, ἀλλ' Ἰουστῖνον ἀνεκήρυξαν. Here there can be no question of mere Hippodrome-factions. The true importance of the Demes has been recognized by H. Gelzer, who suggests a comparison with the Macedonian Ecclesia of Alexandria under the elder Ptolemies.[3] The Deme organization represents a survival of the old Greek *polis*.

But the problem how the Demes came to be connected with the colours of the circus has still to be solved. We have no clue when or why the Reds and Whites, which were important in Old Rome, came to be lost in the Blues and Greens. In the sixth century the outbreaks of the demes represent a last struggle for municipal independence, on which it is the policy of imperial absolutism to encroach. The power of the demarchs has to give way to the control of the Præfects of the City. We are ignorant when the Peratics were organized separately and placed under the control of the Domestics of the Guards. M. Uspenski guesses that this change may have been contemporaneous with the first organization of the Theme-system (p. 16).

[Literature: Wilcken, Ueber die Partheyen der Rennbahn, in the Abh. of the Berlin Acad., 1827; Rambaud, De Byzantino hippodromo et circensibus factionibus, 1870; cp. Friedländer, Sittengeschichte, vol. 2. Uspenski, *op. cit.*]

1 Theophanes, p. 254, ed. de Boor.

2 ἐδημότευσε πολλούς. I feel no doubt that this explanation of Uspenski (p. 14) is correct.

3 In Krumbacher's Gesch. der byz. Litteratur, ed. 2, p. 930.

11. THE NIKA RIOT

Gibbon does not distinguish the days on which the various events of the Nika riot took place, and he has fallen into some errors. Thus, like most other historians, he places the celebrated dialogue between Justinian and the Greens on the Ides of January, whereas it took place two days before. The extrication of the order of events from our various sources is attended with some difficulty. The following diary is based on a study of the subject contributed by me to the Journal of Hellenic Studies, 1897.

Sunday, Jan. 11 (Ἄκτα διὰ Καλαπόδιον). The Greens complain in the Hippodrome to the Emperor of the conduct of Calapodius. Dialogue of Justinian with the Greens (described by Theophanes). The Greens leave the Hippodrome.

In the evening a number of criminals, both Blues and Greens, are executed by the Praefect of the City. This execution was doubtless a consequence of the scene in the Hippodrome, being designed to display the Emperor's impartiality to Blues and Greens alike.

A Blue and a Green are rescued and taken to the Asylum of St. Laurentius.

Monday, Jan. 12. The interval of a day gives the two factions time to concert joint action for obtaining the pardon of the two rescued criminals.

Tuesday, Jan. 13. Great celebration of horse-races in the Hippodrome (for which the races of Sunday were a sort of rehearsal). Both Demes appeal to the Emperor for mercy in vain. They then declare their union openly (as the *Prasinoveneti* or Green-Blues).

In the evening they go in a crowd to the Praefect of the City and make a new demand for a reprieve. Receiving no answer they attack the Praetorium and set it on fire; prisoners in the Praetorium prison are let out.

The rioters then march to the Augusteum to attack the Palace. There are conflagrations during the night and ensuing day, and the following buildings are destroyed: the Chalkê or portico of Palace, the Baths of Zeuxippus, the Senatehouse of the Augusteum, the Church of St. Sophia. This is the *first* conflagration.

Wednesday, Jan. 14. The riot, which had begun with a demand for a reprieve, now develops into an insurrection against the oppression of the administration. The outcry is directed especially against John the Cappadocian, Tribonian, and Eudaemon (Praef. of the City). Justinian yields to the pressure and deposes these ministers. But it is too late; the insurgents are determined to depose him, and the idea is to set in his place a member of the house of Anastasius. As Hypatius and Pompeius were in the Palace the people rush to the house of their brother Probus. But Probus is not found, and they set fire to his house.

Thursday, Jan. 15. Belisarius, at the head of a band of Heruls and Goths, issues from the Palace and attacks the mob. Fighting in the streets. It was, perhaps, on this day that the clergy intervened.

Friday, Jan. 16. A new attack is made on the Praetorium. Fighting in the streets continues, and a *second* conflagration breaks out in the quarter north of S. Irene and the Hostel of Eubulus. The fire, blown southward by a north wind, consumes this Hostel, the Baths of Alexander, the Church of St. Irene, and the Hostel of Sampson.

Saturday, Jan. 17. The fighting continues. The rioters occupy a building called the *Octagon* (near the Basilica). The soldiers set fire to it, and a *third* conflagration ensues. This fire destroys the Octagon, the Church of St. Theodore Sphoracius, the Palace of Lausus, the Porticoes of the Mesê or Middle Street, the Church of St. Aquilina, the arch across the Mesê close to the Forum of Constantine, &c.

Evening. Hypatius and Pompeius leave the Palace.

Sunday, Jan. 18. Before sunrise Justinian appears in the Hippodrome and takes an oath before the assembled people, but does not produce the desired effect. Hypatius is proclaimed; Justinian contemplates flight; a council is held in the Palace, at which Theodora's view prevails.

The revolt is then suppressed by the massacre in the Hippodrome.

Monday, Jan. 19, before daylight Hypatius and Pompeius are executed.

The final massacre is commonly placed on the Monday, but I have shown that it must have occurred on Sunday (*op. cit.*).

[Special monographs: W. A. Schmidt, Der Aufstand in Constantinopel unter Kaiser Justinian, 1854; P. Kalligas, περὶ τῆς στάσεως τοῦ Νίκα (in Μελέται καὶ Λόγοι, p. 329, *sqq.*) 1882.]

12. ROUTES AND COMMERCE BETWEEN THE EMPIRE AND CHINA —(P. 230 *sqq.*)

(Reinaud, Relations Politiques et Commerciales de l'Empire romain avec l'Asie orientale, 1863; Pardessus in the Mém. de l'Acad. des Inscr., 1842, see above p. 229; F. von Richthofen, China, i., 1877; Bretschneider in Notes and Queries on China and Japan, vol. iv.; F. Hirth, China and the Roman Orient, researches into their ancient and mediæval relations, as represented in old Chinese Records, 1885; R. von Scala, Ueber die wichtigsten Beziehungen des Orients zum Occidente. The work of Hirth is admirably done; he gives the literal translations of the Chinese texts, and explains their date and character, so that the reader knows what he is dealing with and can test Hirth's conclusions. But Hirth seems to have no acquaintance with Cosmas Indicopleustes.)

The earliest certain mention of the Roman Empire in Chinese history[1] is in the Hou-han-shu, which, written during the fifth century, covers the period A.D. 25 to 220. Its sources were the notes made by the court chroniclers from day to day, which were carefully stored in the archives and concealed from the monarch himself, and thus supplied impartial and contemporary material to subsequent historians. We learn from this history that, in the year A.D. 97, a certain Kan-ying was sent as an ambassador to Ta-ts'in. He arrived at T'iao-chih on the coast of the great sea. But when he was going to embark the sailors said to him: "The sea is vast and great; with favourable winds it is possible to cross within three months, but if you meet slow winds, it may also take you two years. It is for this reason that those who go to sea take on board a supply of three years' provisions. There is something in the sea which is apt to make man homesick, and several have thus lost their lives." Hearing this, Kan-ying gave up the idea of visiting Ta-ts'in (Hirth's translation, *op. cit.*, p. 39).

It has been fully shown by Hirth that Ta-ts'in does not mean the whole Roman Empire, but only the eastern part of it, especially Syria, and that the royal city of Ta-ts'in always means Antioch. In the seventh century we first meet *Fu-lin*, the mediæval name of Ta-ts'in. The appearance of this new name has been probably connected with the Nestorian mission in China (see below, vol. v., c. xlvii.); and Hirth thinks it represents *Bethlehem*—plausibly, *if* he is right in supposing that the old pronunciation was *bat-lim*.

The episode of Kan-ying shows that the trade route between China and the west in the first century A.D. was overland to Parthia; but thence from the city of T'iao-chih (which Hirth identifies with Hira) by river and sea round Arabia, to Aelana, the port of Petra at the head of the Red Sea, and Myos Hormos on the coast of Egypt. We also see that the carrying-trade between China and the Empire was in the hands of the Parthian merchants, whose interest it was to prevent direct communications. The kings of Ta-ts'in "always desired to send

[1] Syria *may* be mentioned earlier in the Shih-chi (written about B.C. 91), under the name of Li-kan, which Hirth proposes to identify with Rekem = Petra (*r* is regularly represented by *l* in Chinese pronunciation, at least in certain dialects). Certainly the Hou-han-shu expressly identifies Li-kan with Ta-ts'in.

embassies to China but the An-hsi [Parthians] wished to carry on trade with them in Chinese silks, and it is for this reason that they were cut off from communication" (Hou-han-shu).

This arrangement was changed after the Parthian war of Marcus Aurelius in A.D. 166, and we now have the satisfaction of meeting the name of a Roman Emperor, in a shape that can be easily recognized, in the Chinese Chronicles. We read in the same document this important historical notice (*ib.* p. 42):

"This [the indirect commerce] lasted till the ninth year of the Yen-hsi period during the Emperor Huan-ti's reign [*i.e.*, A.D. 166], when the king of Ta-ts'in, An-tun, sent an embassy who, from the frontier of Jih-nan [Annam], offered ivory, rhinoceros horns, and tortoise shell. From that dates the [direct] intercourse with this country."

In view of the date, the most sceptical critic can hardly refuse to recognize in Antun the name of (Marcus) Antoninus. But it is not legitimate to infer that a formal embassy was sent by the Emperor. It is more probable (as Hirth points out) that merchants went on their own account and of course used the Emperor's name. When the new direct route was established, Taprobane or Ceylon was the entrepôt, where the Chinese and Roman vessels met and the goods were transshipped.

How far the overland routes were still used is not clear. It is supposed that the road from Seleucia to Antioch is described in the Hou-han-shu (p. 43), where mention is made of a flying-bridge which has been identified by Hirth with the Euphrates-bridge at Zeugma. The road is described as safe from robbers, but dangerous from fierce tigers and lions. Nevertheless there is a difficulty in the interpretation of some Chinese words, which makes the identification of this route uncertain. But in the statement that "every ten li [in this country] are marked by a t'ing, thirty li by a chih [resting-place]" we can recognize the thirty stadia, and the three Arabian miles, which were equivalent to a parasang (Hirth, p. 223).

The chief products which went to China from the Roman orient were: precious stones, glass, the textile fabrics of Syria, including silk rewoven and dyed, storax and other drugs. Syria was famous as a centre of traffic in precious stones. In the Hou-han-shu (p. 43) it is sceptically remarked: "the articles made of rare precious stones produced in this country are sham curiosities and mostly not genuine".

Antioch, the capital of Ta-ts'in, is described in several of these Chinese histories, and its name is given (in the Wei-shu, sixth century) as An-tu. We can recognize in this description (p. 49) the *tetrapolis*, or four cities, of Antioch, and Hirth has shown that the measurements given by the Chinese historians may not be far from the truth. The news of the conquest of Antioch and Syria by the Saracens reached China in A.D. 643 and is recorded in another history (tenth century; p. 55).

13. JUSTINIAN'S COINAGE—(P. 238-9)

"Anastasius introduced a new copper coinage in the year 498, in order to relieve the people from the inconvenience resulting from the great variety in the weight and value of the coins in circulation, many of which must have been much defaced by the tear and wear of time. The new coinage was composed of pieces with their value marked on the reverse by large numeral letters indicating the number of units they contained. The nummus, which was the smallest copper coin then in circulation, appears to have been taken as this unit, and its weight had already fallen to about 6 grains. The pieces in general circulation were those of 1, 5, 10, 20 and 40 nummi, marked A, E, I, K and M.

"Justin I. followed the type and standard of Anastasius, but the barbarous fabric of his coins, even when minted at Constantinople, is remarkable. The same system and the same barbarism appear in the copper money of Justinian I. until the twelfth year of his reign, A.D. 538. He then improved the fabric and

added the date, numbering the years of his reign on the reverse. Though the value of copper had been fixed by the code at a higher rate than by the law of 396, since a solidus was exacted where twenty pounds of copper were due to the fisc, Justinian nevertheless increased the size of his copper coins. Now if we suppose the coins to have corresponded with the value of the copper as indicated in the code, the normal weight of the nummus being 10 grains, the piece of 40 nummi would be equal to a Roman ounce, and 240 ought to have been current for a solidus. No piece of 40 nummi has yet been found weighing an ounce, and it has been supposed that these pieces are the coins mentioned by Procopius, who says that previous to the reform the money-changers gave 210 obols, which were called pholles, for a solidus, but that Justinian fixed the value of the solidus at 180 obols, by which he robbed the people of one-sixth of the value of every solidus in circulation. It has, however, lately been conjectured that the obolus to which Procopius alludes was a silver coin, and according to the proportion between silver and gold then observed at the Roman mint, a silver coin current as $\frac{1}{180}$ of a solidus ought to have weighed 5·6 grains, and such pieces exist. It is not probable that the copper coinage of Justinian was ever minted at its real metallic value, and it is certain that he made frequent reductions in its weight, and that specimens can be found differing in weight which were issued from the same mint in the same year. An issue of unusually deteriorated money in the twenty-sixth year of his reign caused an insurrection, which was appeased by recalling the debased pieces" (Finlay, History of Greece, vol. i. p. 445-7).

14. ORACLES IN PROCOPIUS—(P. 307)

Two Latin oracles, quoted and translated by Procopius in Bell. Got. Bk. i., have perplexed interpreters. The Latin words, copied by Greek scribes ignorant of Latin, underwent corruption. One general principle of the corruption is clear. Those Latin letters which have a different form from the corresponding Greek were assimilated to Greek letters of similar form but different sound. Thus P was taken for *Rô*, C for *Sigma*, F was assimilated to E. Thus EXPEDITA would appear as ἐχρεδίτα (as we actually find it in the Oxford Ms. of John Malalas, p. 427, ed. Bonn). AFRICA CAPTA would be set down in the form ἀερισα σαρτα.

(1) The oracle concerning Mundus, to which Gibbon refers as obscure, appears thus in the best Ms. (ed. Comparetti, i. p. 47) :—

αερισαcαρτα mudus cum natu ρεριστα[λ]

(other Mss. give ἀερίσας ἄρτα and ρεριστασι or τζεριστασι).

The interpretation of the first five words is clear :—

Africa capta Mundus cum nato . . .

but the last seven (eight ?) characters can hardly represent *peribit* or *peribunt*, though some part of *perire* (Procop. gives ἀπολεῖται) seems to lurk in them.

(2) The Sibylline prophecy with which the besieged Romans consoled themselves in the spring of A.D. 537, that in the month of July a king would arise for the Romans and deliver them from fear of the Goths, is recorded in bk. i. c. 24 (Comparetti, p. 177), and is more difficult. The best Mss. give the Latin in peculiar characters which cannot be here reproduced (see Comparetti) ; the rest give a Greek transliteration :—

ἦν τι νιοιμεν ζὲ και ιβεννω. καὶ κατε νησι γὰ σοενιπιήν ἔτι σο πιαπίετα.

The interpretation of Procopius is : χρῆναι γὰρ τότε βασιλέα Ῥωμαίοις καταστῆναί τινα ἐξ οὗ δὴ Γετικὸν οὐδὲν Ῥώμῃ τὸ λοιπὸν δείσειε.

Comparetti gives as the original :—

Quintili mense sub novo Romanus rege nihil Geticum iam metuet.

But the words *sub novo Romanus rege* are not there. By a careful examination of the characters it may, I think, be shown that the oracle ran :—

Quintili mense si regnum stat in urbe nihil Geticum iam ——

The last word reads *atmet* (possibly, by an anagrammatic mistake, *metuat*).

15. KOTRIGURS, UTURGURS, TETRAXITO GOTHS—(P. 344, 426)

It was natural enough for Gibbon to describe the people of Zabergan who invaded the Illyric peninsula in A.D. 559 as Bulgarians. Victor Tonnennensis *ad ann.* 560 has the notice : Bulgares Thraciam pervadunt et usque ad Sycas Constantinopolin veniunt ; and it is clear that he refers to the same invasion which is described in detail by Agathias. Malalas, in his record of the event (p. 490 ; March A.D. 559), describes the invaders as οἱ Οὖννοι καὶ οἱ Σκλάβοι, Huns and Slavs (and his notice is copied by Theophanes, p. 233, ed. de Boor). But Agathias does not speak of Bulgarians or Slavs ; in his history Zabergan is the chief of the Kotrigur Huns, whom we already knew from Procopius. In the Gothic War, B. 4, c. 4, 5, 18, Procopius explains that the Kotrigurs dwell "on this side of the Maeotic Lake," the Uturgurs (who appear in Agathias as the Utigurs[1]) beyond it, on the east side of the Cimmerian Bosporus. The Don was the boundary between their territories. And both Procopius and Agathias represent Kotrigurs and Utigurs as tribes of Huns. There can be no doubt that Kotrigurs, Utigurs, and Bulgarians belonged to the same race as the Huns of Attila and spoke tongues closely related,—were, in fact, Huns. They had all been under Attila's dominion.

The close relation of kinship, and at the same time a clearly marked political distinction, between the Kotrigurs, Uturgurs and Bulgarians is shown by the legends which represent (1) Kuturgur and Uturgur as the sons of the same father, who divided his kingdom (Proc. B. G. iv. 5), and (2) Kotragos as a son of Kuvrat, the ancestor of the Bulgarians (Nicephorus Patriarch., Brev. p. 33, ed. de Boor ; Theophanes, p. 321, ed. de Boor), along with the notice (*ib.*) that the Kotragoi near Lake Maeotis are ὁμόφυλοι of the Bulgarians.

But it is highly improbable that Kotrigur is another name for Bulgarian. It is far safer to keep tribes apart than to identify them. The Kotrigurs (as is clear from Procopius) abode between the Don and the Dnieper ; the Bulgarians, whose invasions of Thrace began in the end of the fifth century, as we know from Ennodius and Marcellinus, were probably settled nearer the Danube (in Moldavia and Bessarabia). Compare Jordanes, Getica, c. 37, p. 63, ed. Mommsen.

We must therefore explain the notice of Victor Tonnennensis by the natural supposition that Bulgarians joined in the Kotrigur expedition ; and that Slavs, from the regions north of the Danube, also took part in it, is stated by Malalas.

The previous dealings of Justinian with these Huns of the Dnieper and Don are recorded by Procopius (B. G. 4, 18, 19). He adopted the same principles of policy which were afterwards formulated into a system in the *De Administratione Imperii* of Constantine Porphyrogennetos. The danger to the Empire was from the Kotrigurs who were nearest to it ; and so Justinian cultivated friendly relations with the Uturgurs who were farthest from it, gave them yearly presents, and endeavoured to stir up discord between the two peoples. In A.D. 550, a band of Kotrigurs, invoked by the Gepids against their enemies the Lombards, crossed the Danube and ravaged Imperial territory. Justinian incited Sandichl, the king of the Uturgurs, to invade the Kotrigur territory, where he wrought great destruction (? A.D. 551). The same policy was repeated after the invasion of Zabergan in A.D. 559 ; and Sandichl, having captured their wives and children,

[1] Priscus has Onogurs ; Theophylactus Unnugurs ; Jordanes Hunugurs.

met and defeated the warriors of Zabergan on their return from Thrace (see Agathias, 5, 24, 25, and Menander, fr. 3, F. H. G. iv. p. 202).

In the attack upon the Kotrigurs in A.D. 551, the Uturgurs were assisted by 2000 Tetraxite Goths. The remnant of the Goths who had not accompanied their brethren to new homes in Spain and Italy, remained in the Crimea. The events which followed the fall of Attila's empire led to their being split up into two parts. The Avars pressed on the Sabiri and other Hunnic peoples between the Caucasus and Lake Maeotis; the consequence was that there was a western movement; the Onogurs and others sought new abodes (Priscus, frag. 30). It is generally assumed, and doubtless justly, that the Onogurs of Priscus (the Hunugurs of Jordanes, and Unnugurs of Theophylactus) are the same as the Uturgurs of Procopius.[2] This being so, the Uturgurs or Onogurs return to their old abode; but instead of travelling round the shores of the Maeotic Sea, they enter the Crimea, which they find occupied by Huns (the Altziagiri[3]) and Goths. With a portion of the Gothic race they cross over the straits of Kertsch; the Tetraxite Goths, as they were called, establishing their abode near the coast, around the city of Phanagoria (in the peninsula of Taman).

These Goths were Christians, but they do not seem to have learned their Christianity from Ulfilas, for they were not Arians. Procopius says that their religion was primitive and simple. We here touch on a problem which has not been fully cleared up. In the year 547-8 they sent an embassy to Constantinople. Their bishop had died and they asked Justinian to send them a new one. At the same time the ambassadors in a private audience explained the political situation in the regions of Lake Maeotis and set forth the advantages which the Empire could derive from fomenting enmities among the Huns. An inscription has been recently found near Taman, on a stone which may have come from Phanagoria, and it possesses interest as being possibly connected with this negotiation. It was published by V. Latyshev (in the Vizantiski Vremennik, 1894, p. 657 *sqq.*), who sought to explain it by Justinian's political relations with Bosporus in A.D. 527-8 (see below), and dated it A.D. 533. But the serious objections to this explanation have been set forth by Kulakovski (Viz. Vrem., 1895, 189 *sqq.*).

We have clearly to do with a building—probably a church—built under the auspices, and at the expense (?) of Justinian, in the 11th indiction. The place where the stone was found indicates *prima facie* that it was a building at Phanagoria; for why should a stone relating to a building at Bosporus lie in the Taman peninsula? We may admit that Kulakovski may be right in identifying "the eleventh indiction" of the inscription with the year A.D. 547-8, in which Justinian gave the Tetraxite Goths a bishop. At the same time he may have subscribed money to the erection of a new church or the restoration of an old one. But to whichever of the three eleventh indictions of Justinian's reign the inscription belongs, it is an interesting monument of his influence in Taman.[4]

To return to the Crimea, it appears from Procopius (B. G. 4, 5) that it came under the power of the Kotrigur Huns. His narrative implies that Kotrigurs and Uturgurs had gone together westward and returned together eastward; and, while the Uturgurs crossed the Cimmerian straits, the Kotrigurs remained in, and north of, the Crimea.[5] The city of Cherson alone defied the barbarians and remained practically autonomous, though acknowledging allegiance to the Empire. No Roman governor ruled in Cherson until the ninth century.

[2] Uturgur, or Utigur (Agathias), is probably the correct name; Onogur, or Unnogur, are the travesties of popular etymology, suggesting ὄνος or Οὖννος.

[3] Jordanes, Get. c. 37.

[4] Since these words were written, A. Semenov has discussed the inscription (in Byz. Ztschrift., 6, p. 387 *sqq.*, 1897) with similar reserve.

[5] It is tempting to suppose that the Saragurs, mentioned along with the Onogurs by Priscus (fr. 30), is a mistake for the Kotrigurs. If so, Priscus and Procopius supplement each other beautifully. The Saragurs subjugated the Akatirs; this would represent the establishment of the Kotrigurs between Don and Dnieper.

Bosporus, too, was independent, but in the reign of Justin we find it acknowledging the supremacy of New Rome (Procopius, B. P. i. 12). Near it was settled a small tribe of Huns (? Altziagirs). At the time of Justinian's succession their king's name was Grod (Γρωδ, Malalas, Cod. Barocc.; Γορδᾶς, Theophanes, who took the notice from Malalas);[6] and he, desiring to become a Christian, went to Constantinople and was baptized. His journey had also a political object. Justinian gave him money and he undertook to defend Bosporus. The great importance of Bosporus at this time lay in its being the chief emporium between the Empire and Hunland. It seems pretty clear that Bosporus was at this time threatened by the Kotrigurs, and the journey of Grod may have been rather due to an invitation from Constantinople than spontaneous. That danger threatened at this moment is shown by the fact that Justinian also placed a garrison in Bosporus under a tribune. But Grod's conversion was not a success. The heathen priests murdered him, and this tragedy was followed by the slaughter of the garrison of Bosporus. We hear no more of Bosporus until it was taken by the Turks (Khazars) in A.D. 576. Kulakovski has well shown that Justinian had little interest in maintaining in it a garrison or a governor (Viz. Vrem., ii. 1896, 8 *sqq.*), for it was never a centre for political relations with the lands east of the Euxine. Embassies between Constantinople and the Alans, or the Abasgians, or the Turks of the Golden Mount went overland by the south coast of the Black Sea and Trebizond, and not *via* Bosporus. After A.D. 576 Bosporus was subject to the Khazars.

The inscription which was found in the region of Taman in 1803 and is printed in Boeckh's Corpus Inscr. Gr. 8740, is still mysterious. It has been recently discussed by the two Russian scholars to whom I have already referred, Latyshev (*loc. cit.*) and Kulakovski (Viz. Vrem., 1896, 1 *sqq.*).[7] Only the three last letters of the name of "our most pious and god-protected lord" can be deciphered (KIC), and the favourite restoration is Μαυρικις. But this lord is certainly not the Emperor Maurice, as Kulakovski has shown, for (1) the shores of the Bosporus after A.D. 576 were under the dominion of the Turks, and (2) an Emperor would not be described by such a title. The inscription shows that an officer named Eupaterios, who styles himself "the most glorious stratelates and duke of Cherson," restored a *kaisarion* or palace for a barbarian prince of unknown name, on the east side of the Bosporus, in some eighth indiction in the fifth or sixth century A.D. (for to such a date the writing points). The barbarian was clearly a Christian, and it is hard to see who he can have been but a chief of the Tetraxite Goths, who got workmen from Cherson. But it is very strange that an officer of Cherson should describe himself as the "loyal servant" of a Gothic prince.[8]

(The subject of the Tetraxite Goths has been treated by Vasilievski, in the Zhurnal Min. Narod. Prosvieschenia, 195 (1878), p. 105 *sqq.*)

16. THE TURKS—(P. 349)

The question of the origin of the Turks has been recently discussed by a Chinese scholar, Mr. E. H. Parker (in the English Historical Review, July, 1896, p. 431 *sqq.*), on the basis of Chinese sources, with reference to the statements of Greek writers.

[6] This name is not included in the list of Hun and Avar names in Vámbéry's *A magyarok eredete*.

[7] πρὸς τοῖς λοιποῖς | μεγάλοις καὶ θαυμαστοῖς | κατορθώμασι καὶ τόδε τὸ | λαμπρὸν ἐν Βοοσπόρῳ | καισάριον ἀνενέωσεν | [. . .] κις ὁ εὐσεβέστατος καὶ θεοφύλακτος ἡμῶν | δεσπότης διὰ τοῦ γνησίου αὐτοῦ | δούλου Εὐπατερίου τοῦ ἐνδοξοτάτου | στρατηλάτου καὶ δουκὸς Χερσῶνος. Ἰνδικτιῶνος η.

[8] The inscription of the Caesar Tiberius Julius Diptunes of Bosporus, published in vol. 2 of Latyshev's collection of Inscriptions (No. 39), cannot belong to Justinian's reign, as Latyshev now admits, but probably dates from the fourth or fifth century.

(1) *The Turks were Hiung-nu.* A branch of the Hiung-nu, in the central part of the modern province of Kan-suh, was crushed by the Tungusic Tartars; but Asena fled westward with 500 tents to the territory of the Geougen, and his men were employed by them as iron workers in an iron district. Nearly a hundred years after the flight of Asena, his descendant Notur (before A.D. 543) first introduced the word Turk as the name of his folk. The name Türk occurs in the Turkish inscription which was discovered in 1890 by Heikel near Lake Tsaidam in the Valley of the Upper Orchon,[1] and it is explained by Chinese writers to mean a helmet—referring to a mountain shaped like a casque.

(2) *Seat of the Turkish power in the sixth century; the Golden Mountains.* There seems little doubt that (as Mr. Parker has shown) the residence of the Turkish Khans, when they overthrew the power of the Geougen, was near the eastern border of the modern Chinese province of Kan-suh, somewhat north of the Kok-o-nor mountains. Here was the iron district where they worked for the Geougen.

It is always assumed that *Ektág* in Menander's account of the earlier embassy of A.D. 568 is to be identified with *Ektél* in his account of the later embassy of A.D. 576 (p. 227 and 247, ed. Müller). Of course, the two words are the same and mean "the Golden (White) Mount," as Menander explains. But do they designate the same mountain? There is considerable difficulty in supposing that they do. The first embassy visits the prince Dizabul in Ektag. The second embassy is also sent to Dizabul, but the envoys find on arriving that Dizabul has just died and that his son Turxanth has succeeded him. It is natural to suppose (as there is no indication to the contrary) that the meeting between Turxanth and the Roman envoys, and the obsequies of Dizabul, took place at Mount Ektag, the residence of Dizabul and Turxanth. After the obsequies Turxanth sent the ambassadors to Turkish potentates who lived farther east or south-east (ἐνδοτέρω), and especially to his relative Tardu who lived at Mount Ektel. This narrative implies that Mount Ektel is a totally different place from Mount Ektag; and the Chinese evidence as to two Golden Mountains is sufficient to remove any scruples we might feel about interpreting Menander's statements in the most reasonable way. Having identified Ektag with Altai, and distinguished Ektel from Ektag, we can hardly refuse to go further and identify Ektel with the other Kinshan—the residence of the chief khan. At this time, however, the name of the chief khan was Tapur. Tardu has been identified with plausibility, by Mr. Parker, with Tat-t'ou (son of Tumen), who according to Chinese records reigned simultaneously with Shaporo. There is no difficulty in supposing that the residence of Tardu, who was clearly a subordinate khan, was in the neighbourhood of the Southern Golden Mountain and might be described as κατὰ τὸ Ἔκτελ ὄρος.

(3) *The succession of Turkish Khans.* Tumen, who threw off the yoke of the Geougen, died in A.D. 553; was succeeded by his eldest son Isiki, who appears to have reigned only for a few months; and then by his second son Mukan, who completed the annihilation of the Geougen and subdued the Ephthalites. The succession is (see Parker, *op. cit.*):—

Tumen A.D. 543
Isiki A.D. 553
Mukan A.D. 553
Tapur A.D. 572
Shaporo A.D. 581
Chulohou A.D. 587
Tulan A.D. 588
Durli (or Turri) A.D. 599.

[1] This immensely interesting inscription was ingeniously deciphered by Prof. V. Thomsen of Copenhagen; but his decipherment must doubtless be accepted with great reserve. It belongs to the year A.D. 732, and was engraved on a stone set up by a Chinese emperor in honour of a Turkish prince. (Thomsen, Inscriptions de l'Orkhon déchiffrées, 1894; Radlov, Arbeiten der Orchon-expedition, 1892; Radlov, Die alt-türkischen Inschriften der Mongolei, 1894-5; E. H. Parker, in the Academy for Dec. 21, 1895.)

Under the Khan Mukan the Turkish power in its early period seems to have been at its height. He "established a system of government which was practically bounded by Japan and Corea, China and Thibet, Persia and the Eastern Roman Empire". It appears from Turkish inscriptions that the Turks called the Chinese *Tavgas;* and it can hardly be questioned that this is the same word as *Taugast*, a land mentioned by Theophylactus as in the neighbourhood of India. He states that the khan was at peace with Taugast (in the reign of Maurice).

Dizabul (or rather Silzibul) of the Greek sources is of course distinct from Mukan; but I have shown that it is impossible to regard him as a khan subordinate to Mukan, in the face of the statements of Menander (Eng. Hist. Review, July, 1897). There was a split among the Turks, at some time previous to the first embassy described by Menander; and the result was the existence of two supreme khanates. The seat of one was the Northern Golden Mountain (Ektag, Altai); the seat of the other was the Southern Golden Mountain (Ektel, in Kansuh). During the reign of Justin, Silzibul was chief khan of the northern Turks, Mukan of the southern Turks. (See further: The Turks in the Sixth Century, Eng. Hist. Rev., *loc. cit.*)

17. THE AXUMITES AND HIMYARITES—(P. 384 *sqq.*)

The affairs of the kingdom of the Himyarites or Homerites of Yemen (Arabia Felix) always demanded the attention of the Roman sovrans, as the Himyarites had in their hands most of the carrying trade between the Empire and India. This people carried their civilization to Abyssinia, on the other side of the Red Sea. The capital of the Abyssinian state was Axum, and hence it was known as the kingdom of the Axumites. Our first notice of this state is probably to be found in the *Periplus of the Red Sea*, which was composed by a merchant in the reign of Vespasian. (Best edition of this work by Fabricius, 1880.) There a king Zoskales is mentioned, and it is almost certain that an inscription which Cosmas Indicopleustes copied at Adulis (C. I. G. 5127 B) refers to him. (See D. H. Müller, Denkschriften of the Vienna Acad., xliii., 1894.) In the fourth century we find that the king of Axum has reduced the Homerites under his sway; see C. I. G. 5128, βασιλεὺς Ἀξωμιτῶν καὶ Ὁμηριτῶν. This does not mean that both nations had only one king; it means that the king of the Homerites acknowledged the overlordship of his more powerful neighbour.

At the same time Christianity was beginning to make its way in these regions. Originally both Axumites and Homerites were votaries of the old Sabaean religion. Then the Jewish diaspora had led to the settlement of Jews in Central Arabia—in the region between the Nabataean kingdom (which reached as far as Leuké Kômê) and Yemen,—and the result was that Judaism took root in the kingdom of the Homerites. The mission of Frumentius to Abyssinia about the middle of the fourth century has been mentioned by Gibbon in a former chapter; the foundations of the Ethiopian Church were laid; but the king himself did not embrace the new doctrine. The name of the king of Axum at that time (c. 346-356 A.D.) was Aizan, and he was a pagan (C. I. G. 5128). The conversion of the Homerites was also begun under the auspices of the Emperor Constantius. The missionary was Theophilus, either a Homerite or an Axumite by birth,[1] who had been sent as a hostage to the court of Constantine. The Homerite king, though he had not adopted Christianity, built three Christian churches at his own expense and permitted his subjects to be converted if they wished. It was not till much later, in the reign of Anastasius, that Christianity began to spread, and a bishopric was founded (Theodorus Lector, 2, 58). The progress of the Christian faith advanced at least equally in Axum. It has been

[1] He was a native of the isle of Dibûs. Various suggestions have been made as to the identity of this island. M. Duchesne thinks it was one of the little islands off the coast of Abyssinia.

supposed (though hardly with good reason) that it was before the end of the fifth century that the king (or "negus") of Abyssinia was converted.[2]

In the reign of Justin, a Homerite prince named Dhû-Novas (Gibbon's Dunaan) threw off the Axumite yoke, restored the dominance of the Jewish religion, and massacred Christians at Nejrân. The king sent an embassy to Al-Mundir, the chief of the Saracens of Hira, to announce his success against Axum and Christianity. The message happened to come at a moment when envoys of the Emperor Justin had arrived on business to Al-Mundir (Jan. 20, 524). The news of the massacre, which was soon carried to Syria, created a great sensation, and John Psaltes (abbot of a monastery near the Syrian Chalcis) wrote a hymn in honour of the martyrs. (Published by Schröter, Ztsch. der morgenl. Gesellschaft, 31. There is also extant a letter of one Simeon Beth-Arsam, on the massacre: Syriac text with Italian translation, by J. Guidi, in the Memoirs of the Academia dei Lincei, 1880-1. It is also possible, as M. Duchesne thinks, that the *Martyrium Arethae*, Acta Sanctorum, Oct. x., was drawn up by a contemporary.) On the intervention of Justin, the king of the Axumites, Elesbaas or Chaleb,[3] reconquered Yemen, overthrew Dhû-Novas, and set up Esimphaeus in his stead.[4] But the revolt of a Christian named Abramos soon demanded a second intervention on the part of Elesbaas. This time the negus was unlucky. One Abyssinian army deserted to the rebel, and a second was destroyed. Abramos remained in power, and after the death of Elesbaas recognized the overlordship of his successor.

The embassy of Nonnosus to Elesbaas probably took place in the year A.D. 530.[5] In the year A.D. 542-3 we find, according to Theophanes (p. 223, ed. de Boor), Adad, king of the Axumites, and Damian, king of the Homerites. Damian put to death Roman merchants who entered Yemen, on the ground that they injured his Jewish subjects. This policy injured the trade between Abyssinia and the Empire, and Adad and Damian fell out. Then Adad, who was still a heathen, swore that, if he conquered the Homerites, he would become a Christian. He was victorious and kept his vow, and sent to Justinian for a bishop. A man named John was sent from Alexandria.

This notice of Theophanes was derived from John Malalas, who however apparently placed it in the first year of Justinian (A.D. 527-8). This date cannot be right, as Elesbaas was king of the Axumites in that year. M. Duchesne thinks that the episode of Adad (who in Malalas is called Andan) and Damian (*Dimnos*, in Malalas, more correctly) was anterior to the reign of Elesbaas. This may seem a hazardous conjecture. There is no reason why a successor of Elesbaas (whether his son or not) must needs have been a Christian; and it is hard to believe that Theophanes acted purely arbitrarily in placing under the year A.D. 542-3 an event

[2] This involves the hypothesis that the story of the victory of the Axumite king Andan (or Adad) over the Homerite king Dimnos (or Damianus) is not to be assigned to A.D. 527-8, in which year Malalas who records the story (ed. Bonn, p. 433-4) appears to place it. Theophanes, who takes the notice from Malalas, places it however still later, in A.D. 542-3 (A.M. 6035). Andan swore that he would become a Christian, if he were successful against the Homerites, and he kept his vow.

[3] *Elesbaâs*, Nonnosus, Theophanes; *Elesbôas*, Oxford Ms. of Malálas; *Ellisthaeus*, Procopius; *Ellatzbaao*, Cosmas. Ludolf gives the Ethiopian original as Ela Atzbeha.

[4] For these events the *Martyrium Arethae* and Procopius, B.P. i. 20, are the chief sources. Theophanes briefly mentions the episode under the right year, A.D. 523-4. Procopius gives the name of the new prince or viceroy Esimphaeus, and records the revolt of Abramos. At the end of the *Martyr. Arethae* Elesbaas is represented as investing Abramos with the kingship; but this part is not contained in the Armenian version of the *Martyrium*, and it is therefore safer to follow Procopius. (Cp. Duchesne, p. 326, 328.) Malalas (p. 457, ed. Bonn) gives Anganes as the name of the king of the Homerites who was set up by Elesbaas. The form *Esimphaeus* represents Ἀσσιμβαχά, which is found on a coin (Rev. Numism. 1868, ii. 3). See further the account of Ibn Ishâq (Nöldeke, Tabari, 197 *sqq.*).

[5] We know from Nonnosus himself (ap. Phot. Bibl. Cod. 3 = Müller, iv. p. 179) that he was sent to Elesbaas; and it seems justifiable to identify this embassy with that described by Malalas (p. 457). From the previous dates in Malalas, it seems probable that the year was A.D. 530. The date A.D. 533 (given by Gibbon, Müller, &c.) is too late; for the mission must have been previous to the conclusion of the peace.

which he found in Malalas under 527-8.[6] It must be observed that Malalas was not the only source of Theophanes. On the other hand Ibn Ishāq (apud Tabari; Nöldeke, p. 219) gives a succession of kings of Yemen which leaves no room for Damian. The succession is Abraha, Yaksūm, Masrūq (who is supposed to be the same as *Sanaturkes* in Theophanes of Byzantium; which seems doubtful; for *Sana* in this name seems to correspond to the Homerite town Sana). Ibn Ishāq assigns an impossible number of years to these kings; and I doubt whether his statements are absolutely decisive as against Theophanes.[7]

It is another question whether, as Gutschmid and Nöldeke have suggested, Malalas and Theophanes and John of Ephesus (who has the same story) have interchanged the names of the Axumite and Homerite kings (see Nöldeke, Tabari, p. 175). The reason is that on the obverse of some coins Δαμιάν appears as the heathen king of the Axumites; while on the reverse Ἀφίδας is represented as the vassal king of the Homerites. (Revue Numismat. 1868, t., ii. 1, 2.) This conjecture seems highly probable. In any case the form Diméan explains the Greek variants Δίμνος and Δαμιανός.[8]

The Persian invasion of Yemen took place between 562 and 572 (cp. Nöldeke, p. 224), and formed one of the causes of the war between Justin and Chosroes. Arethas was at this time king of the Axumites, and Justin sent an ambassador named Julian to him, urging him to hostilities against Persia. In noticing this embassy (sub anno 571-2—A.M. 6064) Theophanes has borrowed the account that is given by Malalas of the reception of the ambassador Nonnosus by Elesbaas; and hence he is always supposed to refer to the same embassy and to have misdated it. But the substitution of the new names (Arethas for Elesbaas, and Julianus for the ambassador whom Malalas does not name) refutes this opinion.

In this note I have derived much help from the valuable article of M. l'abbé Duchesne, Missions chrétiennes au sud de l'empire romain, which is included in his *Eglises Séparées*, 1896. Here will be found also an account of the conversions of the Blemmyes and the Nobadae of Upper Egypt.

18. THE WAR IN AFRICA AFTER THE DEATH OF SOLOMON —(P. 390 *sqq.*)

John—who is distinguished, among the numerous officers who bore the same name, as the "brother of Pappus" (Jordanes calls him *Troglita*; Rom. 385)—arrived in Africa towards the end of A.D. 546. He had served under Belisarius in the overthrow of the Vandal kingdom and had remained in Africa during the first military governorship of Solomon (Joh. i., 470). He was then commander of the army in Mesopotamia in the Persian War (Procop. B.P. 2, 14), and was engaged in the battle of Nisibis in which Nabedes was defeated in 541. Procopius (*ib.* 17) represents him as on this occasion rashly involving the army in extreme peril, which was only avoided by the skill of Belisarius; but Corippus ascribes the victory to his hero:—

> expulit ut Persas, stravit quo vulnere Parthos
> confisos turbis densisque obstare sagittis
> tempore quo late manarunt Nitzibis agri
> sanguine Persarum, Parthoque a rege secundus
> congressus Nabedes, fretus virtute feroci,
> amisit socias ipso superante catervas, &c. (i. 58 *sqq.*).

6 The motive of Malalas was to group it with other conversions of heathen kings.

7 It is to be observed that the expedition of Abraha against Mecca, being mentioned by Procopius, B.P. i., 20 (see Nöldeke, p. 205), was earlier than A.D. 545; so that Abraha might conceivably have been dead before 542; and another ruler might have intervened between him and *Yaksum* (Ἰαξωμί).

8 This variation seems in itself to prove that Theophanes had before him another source.

John contrived to enter Theodosiopolis, when it was besieged by the host of Mermeroes, and took part in the defeat of that general at Daras (Coripp., *ib.* 70 *sqq.*). He brought with him to Africa a trusted councillor named Recinarius—*lateri Recinarius haerens* (*ib.* 2, 314),—who had been employed in the negotiations with Chosroes in A.D. 544.

It would probably have been impossible for the Roman power to hold its own in Africa, if the Moors from the Syrtis Major to Mt. Atlas had been united in a solid league. It is highly important to observe that the success of the Empire depended on the discord of the Moorish chiefs, and that the forces upon which John relied in the war were more Moorish than Roman. The three most important chiefs were Antāla, king of the Frexenses (Fraschisch), in Byzacium; Cūsīna, whose tribe[1] was settled under Mount Aurasius, in the neighbourhood of Lambaesis; and Jaudas, king of the Moors of Mt. Aurasius. Cusina and Antala were always on opposite sides. Antala was loyal to Rome, when Cusina rebelled in 535; Cusina was true to Solomon, when Antala took up arms in 544. John was now supported by Cusina, and by Ifisdaias, the chief of another tribe in Numidia. The first battle was fought in the interior regions of Byzacium, in the winter A.D. 546-7, and Antala was routed. John returned to Carthage, but in the following summer had to face a great coalition of the Syrtic tribes, including the Laguantan and the Marmarides, under the leadership of Carcasan. This league was not joined by Antala. The Romans suffered a complete defeat near Marta, a place about ten Roman miles from Tacape on the Lesser Syrtis (Partsch, Procem. p. xxxiii.), and John was unable to resume hostilities till the following year. He retired to Laribus in Western Zeugitana, a town which Justinian had fortified:—[2]

urbs Laribus mediis surgit tutissima silvis
et muris munita novis quos condidit ipse
Iustinianus apex, orbis dominator Eoi
occiduique potens Romani gloria regni.

Here he was close to Numidia and his Moorish confederates, the faithful Cusina and the savage Ifisdaias, and here he spent the winter A.D. 547-8. He succeeded in obtaining the help of king Jaudas, who was generally hostile to Rome; and the whole army, including the immense forces of Cusina and Ifisdaias, assembled in the plain of Arsuris, an unknown place, probably in Byzacium. The Marmaridae and Southern Moors had now been joined by Antala. His wise advice was not to venture on a battle until they had wearied the enemy out by long marches, and the Moors withdrew to the south of Byzacium. But John declined to pursue them; he fortified himself in a stronghold on the coast of that province, where he would probably have awaited their attack if the event had not been hastened by the impatience of his mutinous soldiers. With the help of his Moorish allies he repressed the sedition, but thought it wise to lead his army down into the plains. He encamped in an unknown region called the "fields of Cato," and the Moors, pressed by hunger, were soon compelled to leave their camp and take the field. The defeat of Marta was brilliantly retrieved. Carcasan fell, and the Moors were so effectually broken that Africa had rest for about fourteen years. John remained in Africa as *magister militum*, at least till A.D. 553, in which year we find him undertaking an expedition to Sardinia.[3]

In A.D. 562 the Moorish troubles broke out again. Cusina, the faithful adherent to the Roman cause, was treacherously killed by John Rogatinus, the magister militum, and his sons roused the Moors to vengeance, and devastated the provinces.[4]

[1] The name is not certain. The verse 3, 408,
Cusina Mastracianis secum viribus ingens
is obviously corrupt.
[2] A plan of the citadel is given in Diehl, l'Afrique byzantine, p. 273.
[3] Procop. B. G., 4, 24.
[4] John Malalas, p. 495, ed. Bonn. Cp. Diehl, p. 599.

In this account I have been assisted by the disquisition of J. Partsch, in the Procemium to his edition of Corippus, and by the narrative of M. Ch. Diehl, in L'Afrique byzantine.

19. THE EXARCHS—(P. 391, 423)

The earliest mention of the name Exarch in connexion with the government of Italy is in a letter of Pope Pelagius II. to the deacon Gregory (Migne, Patr. Lat., vol. 82, p. 707; cp. Diehl, Etudes sur l'administration byzantine dans l'exarchat de Ravenne, p. 173), dated Oct. 4, 484. Seven years later we meet the earliest mention of an Exarch of Africa (Gregory the Great, Ep. i. 59), in July, 591. Under the Emperors Justin and Tiberius (A.D. 565-582) the supreme military governor is entitled magister militum. It is therefore plausible to ascribe to Maurice (Diehl, L'Afrique byzantine, p. 478) the investiture of the military governor with extraordinary powers and a new title designating his new position. Gennadius was the first exarch of Africa.

From the first hour of the Imperial restoration in Africa military and civil governors existed side by side, and the double series of magistri militum (and exarchs) and Praetorian Praefects can be imperfectly traced till the middle of the seventh century.[1] On some exceptional occasions the two offices were united in a single individual. Thus Solomon was both magister militum and Praetorian Praefect in A.D. 535, and again in A.D. 539, &c.; and Theodorus held the same powers in A.D. 569. Throughout, the tendency was to subordinate the civil to the military governor, and the creation of the exarchate, with its large powers, decisively reduced the importance of the Praetorian Praefect.

20. THE COMET OF A.D. 531—(P. 433-4)

The identity of the comet of A.D. 1680 with the comets of A.D. 1106, A.D. 531, B.C. 44, &c., is merely an ingenious speculation of Halley. See his Synopsis of the Astronomy of Comets, at end of Whiston's "Sir Isaac Newton's mathematick Philosophy more easily demonstrated" (1716), p. 440 *sqq*. The eccentricity of the comet of A.D. 1680 was calculated by Halley (Philosophical Transactions, 1705, p. 1882), and subsequently by Encke, Euler, and others,—on the basis, of course, of the observations of Flamsteed and Cassini. Newton regarded its orbit as parabolic (Principia, 3, Prop. 41); but it has been calculated that the eccentricity arrived at by Encke, combined with the perihelion distance, would give a period of 8813·9 years (J. C. Houzeau, Vademecum de l' Astronome, 1887, p. 762-3). The observations were probably not sufficiently accurate or numerous to establish whether the orbit was a parabola, or an ellipse with great eccentricity; but in any case there is nothing in the data to suggest 575 years, nor have we material for comparison with the earlier comets which Halley proposed to identify.

For the Chinese observations to which Gibbon refers, see John Williams, Observations of Comets from Chinese Annals, 1871: for comet of B.C. 44, p. 9, for a doubtful comet (?) of A.D. 532, p. 33, for comet of A.D. 1106, p. 60.

21. ROMAN LAW IN THE EAST—(C. XLIV.)

New light has been thrown on the development of Imperial legislation from Constantine to Justinian, and on the reception of Roman law in the eastern half of the empire (especially Syria and Egypt), by the investigations of L. Mitteis, in his work "Reichsrecht und Volksrecht in den östlichen Provinzen des römischen Kaiserreichs" (1891). The study is mainly based on Egyptian papyri and on the Syro-Roman Code of the fifth century, which was edited by Bruns and Sachau (1880).

[1] See list of Diehl, L'Afrique byzantine, p. 596. 9

It was only to be expected that considerable resistance should be presented to the Roman law, which became obligatory for the whole empire after the issue of the *Constitutio Antoniniana* (or Law of Caracalla), among races which had old legal systems of their own, like the Greeks, Egyptians, or Jews. The description which Socrates gives of the survival of old customs at Heliopolis, which were contrary to the law of the empire, indicates that this law was not everywhere and absolutely enforced; the case of Athenais, put off by her brothers with a small portion of the paternal property, points to the survival of the Greek law of inheritance; and the will of Gregory Nazianzen, drawn up *in Greek*, proves that the theoretical invalidity of a testament, not drawn up in Latin and containing the prescribed formulæ, was not practically applied. Theory and practice were inconsistent. It was found impossible not to modify the application of the Roman principles by national and local customs; and thus there came to be a particular law in Syria (cp. the Syro-Roman law book) and another in Egypt. The old legal systems of the East, still surviving though submitted to the influence of the Roman system, presently had their effect upon Imperial legislation, and modified the Roman law itself. The influence of Greek ideas on the legislation of Constantine the Great can be clearly traced.[1] It can be seen, for instance, in his law concerning the *bona materni generis*, by which, on a mother's death, her property belonged to the children, their father having only the administration and usufruct of it, and no right of alienation. The same law is found in the Code of Gortyn (6, 31 *sqq.*).

The degeneration of Roman law (*adulterina doctrina*), caused by the tenacity of "Volksrechte" in the eastern provinces, was a motive of the compilation of Justinian's Digest.

[1] Cp. Mitteis, Beilage III., p. 548 *sqq.* Ammian calls Constantine novator turbatorque priscarum legum.

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